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Supreme Court of the United States

OCTOBER TERM, A. D. 1916.

No. 252

J. SAM ROWLAND, WILLIAM F. McKNIGHT, AND THOMAS E. WOOD, RAILROAD COMMISSIONERS OF THE STATE OF ARKANSAS,

Appellants,

vs.

SIDNEY E. BOYLE, as ADMINISTRATOR OF THE ESTATE OF WILBUR F. BOYLE, DECEASED, AND THE ST. LOUIS & SAN FRANCISCO RAILROAD COMPANY,

Appellees.

BRIEF FOR APPELLEES.

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GUNTHORP-WARREN PRINTING COMPANY, CHICAGO.

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Appellees.

BRIEF FOR APPELLEES.

STATEMENT.

This is an appeal from a final decree of the District Court of the United States for the Western Division of the Eastern District of Arkansas, in favor of Wilbur F. Boyle, a stockholder of the St. Louis & San Francisco Railroad Company, perpetually enjoining and restraining J. Sam Rowland, William F. McKnight, and Thomas E. Wood, as Railroad Commissioners of the State of Arkansas, and representative shippers and passengers, from enforcing, or attempting to enforce, as against the

St. Louis & San Francisco Railroad Company, the Railroad Commission's standard distance tariff No. 3, and the Arkansas two-cent passenger fare statute. In the trial court Boyle was complainant, and the Railroad Company, members of the Railroad Commission, and representative shippers and passengers were defendants. The members of the Railroad Commission in appealing made the St. Louis & San Francisco Railroad Company and Boyle appellees. The alignment of the parties in this court is different from what it was in the trial court. For convenience, Boyle and the Railroad Company will be referred to as plaintiff, and the Railroad Commission and representative shippers and passengers as defendants, this being the proper alignment of the parties according to interest, notwithstanding the fact that the Railroad Company was nominally a defendant in the trial court.

The statement of the issues and the abstract of the evidence presented in defendants' brief is incomplete and inadequate to a proper consideration of plaintiff's contentions, and the evidence in support thereof. Because of the large volume of evidence, no effort will be made to here state in detail plaintiff's contentions and the evidence given in support thereof, but each individual subject matter of controversy will be considered separately, and reference made to the evidence relating thereto. Unless otherwise stated, numbers in parentheses refer to pages of printed record.

Suit was instituted by a stockholder of the St. Louis & San Francisco Railroad Company against that company, the Railroad Commission of Arkansas, and representative shippers and passengers of the railroad company. Plaintiff sought by his bill, which was filed July 18, 1908, to perpetually enjoin the enforcement of the 2c passenger fare

statute of the State, enacted February 2, 1907, and the freight rates promulgated by the Arkansas Commission June 4, 1908, which was a modification of a prior Commission schedule, on the ground that as to each, and both combined, the revenues were after paying necessary expenses inadequate to yield a fair return upon the value of the property employed in such service.

A temporary injunction was granted on September 3, 1908, and a final decree perpetually enjoining the enforcement of the state two-cent passenger fare statute and the Arkansas Commission's freight rates was entered on the 9th day of April, 1915. From this final decree the defendants have prosecuted an appeal to this court.

The evidence on the preliminary hearing in support of the application for a temporary injunction covered the results of operation for the months of September, October, November and December, 1907. The evidence on the final hearing was taken in 1914, and covered the fiscal years 1910, 1911, 1912 and 1913, and the last four months of the calendar year 1907. The test period upon which the cost relations were ascertained under the formula for application to the prior periods was the months of November and December, 1913. These two months were shown to be in all respects normal, and the cost relation results as between state and interstate business found in these months were applied to the fiscal years ending June 30, 1910, to 1913, inclusive, and to the last four months of the calendar year 1907.

The application of the test results to the four years, 1910 to 1913, inclusive, was amply sufficient to demonstrate beyond real controversy the confiscatory nature of both the passenger fare statute and the Commission's schedule of freight rates. However, inasmuch as the temporary injunction was originally obtained in the year 1908, upon a showing based upon the last four months of

the year 1907, the November and December, 1913, test period results were applied to the last four months of the year 1907, and the results found were that the passenger fare statute and the freight rate schedule of the Arkansas Commission were confiscatory in that period, just as they were found to be in all of the other periods.

The defendants, perhaps realizing that the evidence overwhelmingly established the confiscatory nature of the passenger fare statute and the Commission's freight rates in the years 1910, 1911, 1912 and 1913, undertook by a process of equations to create a hypothetical and fictitious condition in the four months of 1907, for the purpose of basing an argument thereon that such rates were not confiscatory in that period. This purported equation is featured throughout the original brief of the defendants, and in connection therewith, and based solely on this hypothetical equation, it is claimed that the passenger fare statute and the Commission's schedule of freight rates were not conclusively shown to have been confiscatory in the last four months of the year 1907.

We believe we will be able to show that this so-called equation not only does not reflect the truth as to conditions in 1907, but is grossly misleading.

The plaintiff has, in accordance with the decision of this court in the case of *Knoxville* v. *Knoxville Water Company*, 212 U. S., 1, applied the test results to an adequate period to demonstrate the confiscatory nature of both the passenger fare statute and the freight rate orders of the Arkansas Commission.

The defendants in the first Arkansas Rate Case (187 Fed., 290; 230 U. S., 553) undertook to assist the court in a solution of the problems involved. Here they have done so in so far only as relates to the assignment of revenues and expenses to the State of Arkansas. In all

matters relating to the apportionment of expenses and values between the freight and passenger service and between intrastate and interstate traffic, they have assumed the role of the technical and uncompromising critic. They have no where made any effort to clarify the issues or assist in a solution of the problems involved. Their efforts have been to becloud and render uncertain rather than to assist in a solution of the problems involved. They apparently insist that no burden whatever rests upon them to justify or attempt to justify the reasonableness, fairness or justice of their own handiwork, the 2c passenger fare statute or the Railroad Commission's freight rates; that they are under no duty to assist the court in a solution of these important questions, and that their full duty to the court, to the public, to the plaintiff and to justice and right is discharged in pressing to the extreme limit the role of the critic.

The defendants in their evidence and in their brief present to the court as a proper measure of whether or not the Arkansas 2c passenger fare statute and the Commission's freight rates are compensatory, combined state and interstate results, based upon state and interstate passenger fares, which for about 17 months of the period involved were upon a 2½c basis, and for 31 months of the period involved were on a 3c basis. They have in effect said to this court that the proper measure of a 2c passenger fare is the combined revenues, state and interstate, realized under 2½c and 3c passenger fares. They have also in effect said that the proper measure of whether or not the Arkansas Commission's schedule of freight rates is compensatory is the return realized upon freight rates from 25 per cent. to 33⅓ per cent. higher than the Commission's schedule, combined with the revenues received from interstate transportation in the State.

Not in a single instance have the defendants undertaken

to measure the compensatory nature of intrastate passenger fares by the return realized from the intrastate passenger business alone, or by the return reduced to a 2c per mile basis. Their evidence is so given, and their brief so presents the issues that but for their criticism of plaintiff's exhibits the court would never have its attention directed to the fact that the defendants' exhibits were based, so far as passenger revenues were concerned, upon 2½c and 3c passenger fares state and interstate instead of 2c passenger fares; and as to freight rates, upon a court tariff and voluntary rates much higher than those challenged.

The plaintiff presented to the court a formula for the allocation of intrastate revenues, expenses and values to the state, and for the apportionment of such expenses and values in accordance with the use made of the property by the several classes of traffic. Complete and convincing evidence was offered in support of the provisions of the formula, the compilation of special statistics thereunder, their applicability to prior years, and the confiscatory results of the 2c passenger fare statute and the Arkansas Commission's schedule of freight rates.

The trial court, after an elaborate hearing, found in favor of the plaintiff upon every issue involved. The defendants are here challenging the direct and definite findings of the trial court made upon satisfactory and convincing evidence.

Plan of Consideration.

The defendants' brief states the controversies presumably for the purpose of pointing out supposed flaws in the plaintiff's case. It no where gives the court an adequate grasp of the plaintiff's theory of the case, and the methods of compiling and presenting statistical results. We believe a better understanding of the case

can be had by a presentation of the plaintiff's theory of the case before considering the contentions urged in the brief of defendants.

We will, therefore, present first a general resume of the problem to be solved; a general analysis of the formula, and a list of the use units used. This will be followed by an explanation of the special test conducted, the special information compiled from current records, and the application thereof to the revenues, expenses and values for the several periods involved.

Detailed consideration is not given all of the exhibits offered in support of the plaintiff's case. Many of these exhibits are accompanied by explanation in such detail that it is not felt that further enlargement upon the same is necessary. There is little or no controversy as to many of the exhibits or challenge of the evidence given in support thereof. Therefore, mere passing mention is made of these exhibits in order to preserve the general thought intact.

The Problem to Be Solved.

The transportation facilities of a railway company, with the exception of freight and passenger cars, exclusive freight and passenger depots, locomotives assigned exclusively to either the freight or passenger service, or such terminal tracks as may be used exclusively in the freight service, are employed concurrently in the receipt, transportation and delivery of passengers and freight. All passenger facilities are employed concurrently in the receipt, transportation and delivery of state and interstate passengers, and all freight facilities are employed concurrently in the receipt, transportation and delivery of state and interstate freight. The roadway is a facility common to both the freight and passenger serv-

ice, as trains moving over it carry both freight and passengers on both state and interstate journeys. The property of the railway company in Arkansas is but a part of a larger system, over which the business of the company as a whole is conducted.

It becomes necessary, therefore, to segregate to Arkansas the revenues received for intrastate transportation service, the expenses incurred in conducting the entire transportation service within the state, and also the value of the property employed in the conduct of such transportation within the state, from the revenues, expenses and values of the system as a whole. Substantially all of the intrastate revenues can be and have been directly located to the state, and by far the greater part of all expenses and values can be directly located to the state. A small percentage of the expense must be apportioned on appropriate units, but values have been stipulated.

An apportionment has also been made of interstate revenues to the state for information and comparison, but these revenues are not important factors in ascertaining whether or not the passenger fare statute and the Arkansas Commission freight rate orders yield a fair return upon the value of the property employed in conducting the state business.

Station facilities are employed in the receipt and delivery of freight and passengers, which is a service distinct from the movement of such freight and passengers over the line. Under the formula, these facilities, when used for services of this character, are classed as terminal, but in some instances there is a line element, representing that part of such facilities used by employes having to do with the movement of trains over the road, of which telegraph operators who receive and transit train orders are the principal part.

Station yard facilities are used largely in the receipt

and delivery of freight. The roadway and the passenger equipment are used chiefly in the line service, but it is necessary to stop passenger trains to perform terminal service in receiving and unloading passengers. The time so spent in this character of service should be and is classed as terminal service, because it is made necessary, not by the movement of passengers over the road between points of origin and destination, but to receive them on the train at point of origin and deliver them from the train at the conclusion of their journey. The same is true with reference to freight equipment, so far as it relates to stopping a freight train to set out a loaded car at destination or to pick up a loaded car at point of origin, or to set out an empty car for the purpose of loading at a given station. This is also true with reference to the train which stops to load or unload less than carload commodities at point of origin or destination of such shipments.

There is also a large use of freight equipment in terminal switching, including both locomotives and cars. At all stations where no switch engine is maintained the locomotive of the local train is used as a switch engine for setting out, switching and picking up cars, and the time of the train employes is devoted to this switching terminal service, and to the loading and unloading of less than carload freight, and fuel, water and lubricants are being consumed. At the larger stations locomotives are directly assigned to do this terminal switching work. Freight cars are in exclusive terminal service for a greater part of their total service time. The predominating terminal service of the freight car is the time in which it sets on the industry track for loading and unloading. However, there is, in addition to this, a substantial part of such time employed in terminal service while freight trains are stopping at stations and engaged in terminal work.

For the movement of trains over the line the railway company has train employes; for maintenance of way and structures and equipment separate classes of employes; for handling cars and switch engines, yard employes; for handling passengers and less than carload freight, and doing local clerical work in regard to all freight and passengers, it has station employes. For the purpose of securing traffic, publishing tariffs, establishing freight rates, etc., it has a department classified as the Traffic Department. It is also necessary to have general executive officers supervising all departments, and local supervising officers for local supervision, who are classified as general and supervisory officers.

For the purpose of classifying the expenses of railway companies the Interstate Commerce Commission has separated such expenditures into five general classifications and 117 accounts,—the first 23 accounts relating to Maintenance of Roadway and Structures; the next 29 to Maintenance of Equipment; the next 8 to Traffic Expenses; the next 45 to Transportation Expenses, and the next 12 to General Expenses. In the Maintenance of Way and Structure Expenses track expenses are included in accounts 2 to 10, inclusive, and buildings, fixtures and grounds in account 16. Maintenance of Equipment Expenses, including repairs, renewals and depreciation, are included in accounts 25 to 44, inclusive. In the Transportation Expenses station employes, and expenses incurred by them, are included in accounts 63 to 66, inclusive. Yard expenses are included in accounts 67 to 78, inclusive, and train expenses in accounts 79 to 93, inclusive.

Each item of expense incurred by a railway company in the maintenance and operation of its property must be charged to one of these 117 accounts. The classification of the items chargeable to these accounts have been

well established by the rules of the Interstate Commerce Commission, and various interpretations thereof, called Conference Rulings. In solving the problems involved, the railway company had available the charges made to each of these accounts, as prescribed by the Interstate Commerce Commission, and this classification furnished an available and appropriate basis upon which to distribute the expenses of the railway company between line and terminal, freight and passenger, state and interstate freight, state and interstate passenger, and mail and express.

Segregation is first made between the freight and passenger service, including mixed as well as freight and passenger trains, and the freight and passenger expenses are then each apportioned between line and terminal. For the line facilities it is necessary to segregate first between freight and passenger, and then the passenger train expenses between that part of the train which serves the passengers and that part which is employed in the transportation of mail and express. The amount assigned to the passenger is then apportioned between state and interstate. The amount assigned to freight is also apportioned to state and interstate on appropriate units.

Immediately following the decision of this court in the Minnesota Rate Case, leading officials of the St. Louis and San Francisco Railroad, and other western lines, held a number of conferences for the purpose of constructing a formula for the apportionment of expenses and property values upon the use basis, as suggested in the opinion in that and other rate cases. Careful consideration was given to every phase of the matter, with a view, first, to locate direct expenses and property values wherever possible, and, second, in case of inability to locate direct, to apportion on appropriate use

units. As a result of these conferences, the formula presented as Exhibit No. 1 in this case was agreed upon as correctly reflecting the use units for the apportionment of expenses and property values.

As stated by Mr. Frank Nay, Comptroller of the Rock Island Lines, a man of great experience and unquestioned integrity:

> "This formula was prepared with the utmost care for the purpose of making an accurate separation of the operating expenses among the different classes of service, with the ultimate view of getting as accurate division as possible between state and interstate freight and passenger expenses, and without regard to what the final result was going to be * * *." (292)

General Analysis of the Formula.

The problem is one of cost accounting. The railway company is in the manufacturing business, engaged in the manufacture and sale of transportation. The formula and statistics compiled thereunder are voluminous because the problem is large, but not because it is an intricate one. The formula is simple and direct in its principles and voluminous only in the details necessary to be carried out.

In the manufacture of transportation the functions of the carrier consist in the receipt of freight and passengers at point of origin, on its own tracks; transportation to destination on the same rails, and there delivery at such destination. In order to manufacture this transportation the railway company must own a plant and rolling stock, and shops, etc., for their maintenance.

The Interstate Commerce Commission as a first step in its cost accounting plan, has prescribed 117 expense accounts, in five blocks, *i. e.*, maintenance of way, maintenance of equipment, traffic, transportation, and general

expenses. Traffic and general expenses represent the supervisory and overhead expenses in a general sense.

The first division is maintenance of way expenses, the upkeep of the plant on which the railroad operates.

The second step, the maintenance of vehicles and motive power, and the appurtenances for their upkeep.

The third step, division of traffic expenses, the expense of the sale of transportation which the railroad manufactures.

The fourth step, the division of transportation expenses, the expenses of the use of the plant in conducting the transportation. These include the operation of vehicles in which freight and passengers are transported, and the operation of depots and other means of receipt and delivery.

The fifth step, division of general expenses, the overhead and supervisory expense of the whole business, both manufacturing and selling.

The functions of the railroad, under this formula, have been divided into "line" and "terminal," or "haulage" and "nonhaulage." "Terminal expense is that incurred incident to, or made necessary by, the receipt and delivery of freight and passengers at origin and destination on the rails of the carrier whose accounts are being analyzed. "Line" or "haulage" expense is that expense incurred incident to, or made necessary by, the transporting of traffic from point of origin to point of destination, after receipt and before delivery.

It is axiomatic that the short-haul traffic is more costly than long-haul traffic. Terminal service occurs more frequently in proportion to the length of the haul in short-haul traffic than in long-haul traffic. To properly locate the relative expense of long and short-haul traffic, the formula was devised so as to charge the expenses of

terminal functions to terminal and the line functions to line, and divide each on appropriate use units.

In previous rate cases all yard and station expenses, as grouped by the Interstate Commerce Commission, were considered terminal, and all other expenses in the transportation group were considered line. This, however, is not altogether the case. In these yard expenses there are many incident to preparing trains to run over the line, which do not serve the freight or passengers which originate or terminate at that particular station exclusively. A very substantial part of these yard expenses, however, are incurred in the performing of terminal service, that is, in the handling of freight and passengers which originate or terminate at the particular station or yard.

There is a small element of line expense in the station expense group, which in previous rate cases were charged to terminal.

In the train service expenses, as classified by the Interstate Commerce Commission, there are many which are not incurred in the movement of trains over the line. For instance, the expense of the work of the local freight trains in receiving and delivering freight and switching cars and stopping at way stations—such as the engine and crew of the local train taking the place of the regular switch engine, in performing such functions. The cost of this service is charged in the Interstate Commerce Commission group to the train service, and in the rate cases which have preceded this one were charged to what we call line expenses. This is an error which is cured by the apportionment of such expenses to line and terminal upon the basis of the time employed in the line and terminal service respectively.

The formula also provides for the apportionment of

maintenance of equipment expenses to line and terminal service. This expense has heretofore been generally treated as a line expense. In some instances, as in the Iron Mountain Arkansas Rate Case (187 Fed., 290; 230 U. S., 553) on the freight side, certain estimated allowances were made as between local and through freight trains to compensate for the more frequent stopping and starting in terminal service of local over through trains; also an allowance for maintenance expenses incurred by freight locomotives and cars in terminal switching service. It is readily apparent as to both freight and passenger equipment that a substantial part of the time of such equipment is spent in terminal service, and such terminal service, from the standpoint of the making of repairs necessary, is the most severe service in which such locomotives and cars are employed. The formula takes cognizance of these conditions and provides for an apportionment of such maintenance expenses between line and terminal and the distribution of the line expenses on appropriate line units and terminal expenses on appropriate terminal units.

The formula provides for ascertaining separately the cost of local and through trains. It is a recognized fact that local freight trains are more expensive to operate per mile run than through freight trains, and more expensive to operate per ton mile of their contents than through freight trains. The local train is manned by a larger crew, who are paid higher rates of pay. It is a much longer time on the road for a given distance or journey. It is more lightly loaded, and must necessarily be in order to accomplish the functions assigned to it. A mixed train is nothing but a local train with a passenger coach attached to it, and has been treated as a local train under the formula.

The formula provides for the analysis of the contents

of the trains, local and through separately, and the ascertainment of the tons one mile of intrastate and interstate freight separately, carried on each class of train. It costs no more to carry a ton of intrastate freight than a ton of interstate freight the same distance *on the same train.* For that reason, it was fair to divide the train costs on the basis of the ton miles of state and interstate freight on each class of trains.

As to station and yard transportation expenses, the formula provides that each ton shall be charged with the cost of the service it receives at each station. In former rate cases, the total state tons were multiplied by two on the assumption that each state shipment got two handlings and each interstate shipment one handling,—and no more,—within a given state. These figures were used to divide the station and yard costs. Under this formula, in dividing station expenses, freight and passenger proportions are arrived at on the basis of the time of employes devoted to each class. The freight proportion of these station expenses was subdivided between clerical work, warehouse work and other classes of service. Taking the clerical and warehouse work as an illustration: the clerical expenses have been divided between intrastate and interstate on the basis of the number of consigments of each handled at each station. This clerical work comprises that which is necessary in accounting for and recording the consignments of freight handled through the station. The station warehouse expense has been divided between state and interstate on the basis of the number of tons of less than carload freight of each class passing through the warehouse or over the platform. The warehouse expenses are incurred for the handling of less than carload freight. The yard cost attaching to the handling of carload freight has been divided be-

tween state and interstate on the basis of the number of cars of each class handled at the individual station.

Passenger terminal expenses have been divided on the basis of the number of passengers entraining and detraining at each station.

It is a well-established rule of cost accounting that general and supervisory expenses should follow the division of all other expenses, because they are overhead to and are incurred on account of and in supervision of the making of such other expenses and for no other purpose.

As stated in defendants' original brief, page 18, plaintiff's evidence supports each item in the formula and exhibits worked out thereunder.

Units and Bases Prescribed by the Formula for Apportionment of Expenses and Values.

We present herewith a list of the more important units and bases employed in the apportionments of expenses and values in ascertaining whether or not the Arkansas passenger fare and freight rates are compensatory. It is apparent, we feel, from an examination of these units that they are all natural use units and appropriate factors for the purposes for which used. They are stated here for the information and convenience of the court, and their particular application is pointed out and considered elsewhere in the brief.

1. Freight, passenger and work equipment car miles within and without the state for the purpose of assiging car repairs and values to the state.

2. Revenue tons one mile and revenue passengers one mile for the purpose of assigning freight and passenger traffic expense to the state.

3. The number of miles run by individual locomotives for the purpose of assigning locomotive repairs and values to the state and the state proportion between freight and passenger service.

4. The total freight and passenger locomotive miles within and without the state for the purpose of assigning lubricants and other supplies for road locomotives to the state and the state proportion between freight and passenger service.

5. The time of switch locomotives in each class of yard service for the purpose of apportioning transportation yard accounts between line and terminal and between freight and passenger.

6. The time of station employes in each class of station service for the purpose of apportioning pay of station employes and station supplies and expenses between line and terminal and freight and passenger.

7. The time of freight and passenger trains in line and terminal service for the purpose of apportioning train operation expenses and maintenance of locomotives and passenger cars between line and terminal.

8. Engine ton miles for the purpose of dividing common line maintenance of way and structures expenses between freight and passenger.

9. Train miles for the purpose of dividing the expenses of dispatching trains, operation of joint tracks and facilities, maintenance of grade crossings, fences, cattle guards and signs, snow and sand fences and snow sheds, signals, telegraph and telephone lines between freight and passenger service.

10. Gross ton miles of mixed trains separated between freight and passenger for the purpose of dividing the expenses of mixed trains between the freight and passenger service.

11. The number of freight and passenger trains passing interlockers for the purpose of dividing these expenses between freight and passenger.

12. The number of freight and passenger trains using drawbridges for the purpose of dividing these expenses between freight and passenger.

13. The number of freight and passenger trains passing crossings for the purpose of dividing crossing flagmen and gatemen expenses between freight and passenger.

14. The number of freight and passenger locomotives handled in engine houses for the purpose of dividing engine house maintenance and operation expenses between freight and passenger.

15. The number of nonrevenue passengers one mile and nonrevenue passengers using stations for the purpose of ascertaining the nonrevenue service expenses incurred by the passenger service.

16. The number of nonrevenue ton miles and tons for the purpose of ascertaining the nonrevenue service freight expenses.

17. Car foot miles of passenger train equipment by classes of service for the purpose of apportioning passenger expenses between Pullman, day cars and mail and express.

18. The state and interstate passengers one mile in Pullman and day cars, respectively, for the purpose of dividing passenger expenses between state and interstate.

19. The number of state and interstate passengers arriving at and departing from stations in the state for the purpose of apportioning passenger terminal expenses between state and interstate.

20. The gross ton miles separately for through and

local trains for the purpose of dividing line freight expenses between through and local trains.

21. The state and interstate revenue net ton miles separately for through and local trains for the purpose of dividing line freight expenses between state and interstate.

22. The number of state and interstate loaded cars handled on terminal tracks within the state for the purpose of dividing terminal yard expenses, and terminal proportion of engine and train expenses, between state and interstate.

23. The number of state and interstate gross tons of loaded cars handled on terminal tracks within the state for the purpose of dividing maintenance of terminal tracks and maintenance of equipment used in terminal service between state and interstate.

24. The state and interstate net tons of revenue freight handled at stations within the state for the purpose of dividing terminal proportion of telegraph and weighing expenses; also miscellaneous building maintenance expenses between state and interstate.

25. The number of state and interstate revenue net tons of L. C. L. freight handled at stations within the state for the purpose of dividing platform and warehouse expenses between state and interstate.

26. The number of state and interstate consignments of freight handled at each station within the state for the purpose of dividing clerical station expenses between state and interstate.

27. The revenue net ton miles and passengers one mile, state and interstate, within the state for the purpose of dividing traffic expenses between state and interstate.

The use of these natural units practically eliminates

the necessity of opinion evidence. They are such natural factors that their statement is strongly persuasive of their representative character as use units in apportioning both expenses and values. There is one apportionment, however, that of necessity rests to a very large extent upon judgment and experience, and that is the apportionment of maintenance of equipment between the line and terminal service. That apportionment is considered elsewhere under the title of "Apportionment of Maintenance of Equipment Expenses between Line and Terminal."

Apportionment of Expenses Between Line and Terminal.

"Line" expenses are defined in the formula (p. 2) as follows:

> " 'Line' expenses are those which attach to, are directly connected with, or are occasioned by the transportation (movement) of traffic from place of receipt (one terminal) to the point of delivery (another terminal). Any service performed in the movement between these termini is a line service and any expense incident thereto constitutes a line expense."

"Terminal" expenses are defined in the formula as follows:

> " 'Terminal' expenses are those which attach to, or are connected with or occasioned by the securing, receiving, loading or otherwise preparing traffic for movement, and the unloading, delivery and other outlay incident to the disposition of the traffic at delivering or terminal station. Any service incident thereto and any expense incurred in connection therewith constitutes a 'terminal' expense."

Railway transportation consists of two distinct classes of service, viz: First, the originating and terminating service, such as the receipt of traffic and preparing it

for transportation at point of origin, and the handling and delivery at point of destination, which, under the formula, has been classed as "terminal" service; second, the movement of freight or passengers, as the case may be, while in trains between point of origin and point of destination, which under the formula, has been classed as "line" service.

Provision has been made under the formula for the segregation of expenses between line or movement expense and terminal or station-yard service expense in detail, in order that each of these classes of expenses may be apportioned between intrastate and interstate separately according to the use made of the various facilities employed in these two different and distinct classes of service. This is important if accurate results are to be obtained, because the relation of the state and interstate business to terminal expenses and terminal service is radically different from such relation to line expenses and line service. The segregation of transportation expenses into line and terminal becomes absolutely necessary in developing the cost of handling the intrastate and interstate traffic, as there is no common unit of measurement which can be applied in the division of both of these classes of expenses between intrastate and interstate, for the reason that the factor of distance must be included and given controlling effect in any unit for the division of expense of line facilities, and excluded entirely from any unit for division of expense of terminal facilities, because the relative use of either class of facilities by intrastate and interstate traffic differs quite materially, and this largely according to the respective length of haul.

The apportionment of freight terminal expenses in Arkansas on the basis of the tons one mile would operate to charge ten times as much per ton actually handled in

terminal service for the interstate as for the intrastate traffic. If the division between line and terminal be disregarded, as defendants seem to indicate should be done, there would be charged against the handling of one interstate ton one time the same amount of expense that would be charged for handling ten intrastate tons, or one intrastate ton ten times. The situation as to the passenger traffic differs only in degree. On the passenger side, the disregarding of the terminal expense would operate to charge to each interstate passenger for each terminal handling the same amount of expense that would be charged to each intrastate passenger for four terminal handlings, or four intrastate passengers for one terminal handling.

The mere statement of these results indicates the absolute unfairness of any method which undertakes to apportion terminal expenses upon the basis of the distance the passenger or ton has traveled.

To a large extent there is a natural separation between the facilities used in the line service and those used in the terminal service, and, consequently, the expenses of their maintenance and operation largely locate themselves to one or the other of these services. However, there are certain classes of maintenance and operating expenses which do not naturally separate themselves, and for this purpose certain time studies were availed of in order to ascertain the proper units of apportionment.

In one instance, that of equipment maintenance, no natural unit could be found, and the apportionment had to be made on the basis of experience and judgment.

The application of the formula has practically eliminated the necessity of that character of expert evidence which was frequently used in former rate cases in lieu

of statistical information for the ascertainment of the relative cost of doing the state and interstate business, and freight and passenger respectively.

The division of haulage expenses between intrastate and interstate traffic on the relative ton miles and passenger miles of state and interstate traffic has always been the accepted basis of apportionment. Likewise, the station terminal expenses have in all rate litigation been apportioned on the freight side as between state and interstate on the basis of the tons handled, and on the passenger side as between state and interstate on the passengers handled. Under the formula there is carved out of the train expenses that part thereof which is the equivalent of the station terminal service, which does not represent movement, and cannot be fairly measured by the distance units. The service performed by the train at a station while passengers are being loaded and unloaded is in every sense the same as that performed by the depot, and the service performed by the train employes during that time is in every sense the duplicate of the service performed by the station employes. And there is no greater reason for assigning the expenses of station employes and maintenance of the station to terminal than there is for assigning to terminal the expenses of the train employes while at the station and engaged in work which in its nature is terminal, namely, the receipt and discharge of passengers and freight. The same is true with reference to other train expenses, including fuel, water, lubricants, maintenance, etc.

To summarize, the terminal service does not operate to move traffic over the road to its destination, does not produce ton miles or passenger miles and cannot logically or reasonably be measured on the ton-mile or passenger-mile unit basis. During the time the train stops, the

process of moving the traffic is stopped. The process of delivering and receiving represents all of the activities of the train and train crew. Inasmuch as state and interstate traffic do not move equal distances it is necessary, in order to do justice as between the two, that some factor be employed which, as to the movement, takes cognizance of the distance, and which, as to the terminal service, takes cognizance of the quantity and numbers—ton handlings and passenger handlings. The service performed by the train and train crew and the fuel consumed during the time of the stop can have no proper relation to the movement of the train and traffic over the line and cannot be logically apportioned between the two on the movement units. These expenses can be fairly charged only on the basis of the traffic accommodated by the stop and the relative amount of the state and interstate traffic so accommodated.

Train transportation expenses are apportioned between line and terminal on the service time basis. That is, the relation of the terminal to the total service time and the terminal service expense thus obtained is apportioned between state and interstate upon the ton handlings and passenger handlings.

The maintenance of equipment is considered elsewhere.

No charge is made against terminal for maintenance of way expenses on account of the use of the tracks by trains while stopping for terminal purposes; that is to say, while it was found 11.41 per cent. of the total service time of passenger trains was at stations in terminal service and 24.72 per cent. of the time of freight trains was at stations in terminal service, no expense was charged to terminal on account of the use of the tracks by such trains while at stations performing terminal service. There is a small amount of terminal track expense charged to the freight service because of the

maintenance of exclusively terminal freight tracks, such as house and industry tracks. There is no terminal maintenance of track expense charged to the passenger service on any account whatever.

We have presented in the exhibits offered in evidence this essential separation of line and terminal service cost, which has been made in the minutest detail, not only as to transportation expenses, but throughout the maintenance of way and maintenance of equipment expenses. This segregation has been made direct according to the use of the railway property, plant and facilities in the line and terminal service, taking careful account of the line and terminal functions performed in each instance, so that the expenses have been divided between line and terminal in accordance with the actual use of the property in which the expense was incurred. The evidence sets forth in detail, and the exhibits demonstrate, how this division of line and terminal expense upon the use basis was made, and on the ground where the line and terminal service was performed and the expense incurred.

The principles discussed here and the applications outlined are fully sustained by the evidence and, in fact, are not seriously controverted. The evidence supporting the same is that of Mr. Hamilton at pages 74, 88, 89, 107, 108, 112, 113 and 114; Mr. Nay at pages 294, and 300 to 308; Mr. Symons at page 465 and the following pages. Attention is directed to the following excerpt from Mr. Hamilton's evidence at pages 88 and 89 of the record:

> "We know how much time it devoted to switching and loading and unloading freight at each station every time every train stopped. We know how long it stopped for other purposes, such as taking coal and water, meeting and passing trains, or getting orders. That latter class of time has been charged

to line service because it is necessary for the running of the train over the road, not for the station delivery or receipt of freight. We have segregated the actual performance of these local and through trains, and found out how much time they devoted to this terminal service, and we have divided that expense on the basis of that time. Heretofore, there has always been buried in the case of both the local train and through train this item of expense, or element of expense, which had nothing to do with the moving of that train over the road. These are not haulage costs, but are really terminal costs. In fact, the local freight train supplants the switch engine when it stops and works at a station for an extended period, a greater or shorter length of time, and that really is a yard function, a treminal function. It simply does that as a matter of economy and expediency to avoid keeping a switch engine there. We have analyzed that time and have charged the station service time, the terminal time, to terminal service. It has not been buried in the haulage cost and charged to each ton mile alike, but it has been located to that station and charged to the tons that were handled at that station, state and interstate. That explains one of the vital differences in the method heretofore followed and the method that has been followed in these exhibits. This terminal cost that we are analyzing has been built up in that way." (88, 89.)

BRIEF REVIEW OF DEVELOPMENT OF PRINCIPLE OF APPORTIONMENT OF OPERATING EXPENSES BETWEEN LINE AND TERMINAL, OR HAULAGE AND NON-HAULAGE, ACCORDING TO THE USE OF THE PROPERTY.

Generally speaking, from the beginning of rate litigation to 1907 train expenses were treated as line and station expenses were treated as terminal, and yard expenses according to use. That is to say, tracks and yards employed in the receipt, and delivery of freight were classed as terminal, and yards used for classification pur-

poses, that is making up and breaking up of trains, were treated as line.

Recognition of the greater terminal expense incurred by the local trains was attempted to be given effect by the addition of arbitrary percentages of the cost of transportation of local over through trains per movement unit. This was usually in the form of opinion evidence, sometimes based upon more or less incomplete statistical information. This is a direct recognition that there is a terminal element in the train service properly chargeable and distributable as between state and interstate on the terminal units.

While this adjustment between local and through trains made in recognition of the greater terminal expense in local trains recognized the principle of the apportionment of train expenses between the line and terminal service, or haulage and non-haulage service, it stops far short of a logical result. It attempts merely to put the local and through train on the same basis with reference to the line and terminal service, but fails to recognize and distribute the terminal element existing in all train service on the terminal units.

For instance, in the *Iron Mountain case*, 187 Fed., 290; 230 U. S., 553, the state divided maintenance of freight cars between the local and through service by first assigning 21.5 per cent. of the total freight car repairs to stopping and starting at way stations and 13.5 per cent. to terminal handlings. For the purpose of equating between local and through service the way station stopping and starting percentage of the local train was multiplied by 4 and the terminal handling percentage by 2, assuming that there was as much as 4 way station stops of cars in local trains to 1 of cars in through trains, and that each car in the local train received twice as

many terminal handlings as each car in the through freight train. The trial court found that this did not make sufficient allowance for the difference between the two classes of service, and that the local stopping and starting percentage should have been applied by a much larger factor than 4. (187 Fed., 339-340.)

However, as was above noted, the state's plan stopped with an attempted equation of local and through trains to a common basis, and failed to make distribution of train terminal expenses so adjusted upon terminal units.

Also, in the Iron Mountain case (187 Fed., 290) locomotives were classed by the state as yard locomotives and road locomotives, and road locomotives were divided between local and through. The state witnesses then added 50 per cent. to the mileage of yard locomotives to provide for the extra maintenance caused by the mileage made in yard service; and 50 per cent. to the mileage of road locomotives in local service to provide for extra switching mileage and 50 per cent. to the switch mileage of local trains to provide for extra maintenance due to switching service. By this process, for the purpose of equating between local and through engine mileage 75 per cent. of the actual mileage made by the local engine was added to such actual mileage in order to place it on a par with the through trains. There was also added to the local engine mileage an additional charge of 12 per cent. on account of engine house expense.

The effect of this equation was destroyed, in so far as reflective of actual results of cost between through and local trains was concerned by equating maintenance of way expenses between the two on the car mileage basis, treating one engine as two cars, whereas Mr. A. M. Wellington, who the state witnesses were purporting to follow, in making this aportionment, stated in Section

115 of his "The Economic Theory of the Location of Railways," that the maintenance made necessary by the locomotive was from one-half to three-fourths of all the damage resulting from the movement of freight trains over the road, while the train itself does only one-fourth to one-half of the damage. In Plaintiff's Exhibit No. 6, page 3, it is shown that the number of freight cars in an average freight train in Arkansas is 25.

The defendants assail the line and terminal division of operating expenses as one especially designed by the railroad companies for use in state rate cases. We believe what we have stated above demonstrates the fact that the defendants in the case at bar were among the first to recognize the principle of such an apportionment, although their basis was imperfect and an inadequate expression of the actual terminal expense incurred in the receipt and delivery of freight and passengers.

Shortly after the recognition of the principle by the Arkansas Commission the Oklahoma Corporation Commission had occasion to make an investigation into the cost of conducting freight transportation, state and interstate respectively. It is not believed that even the defendants in this case will charge the Oklahoma Commission with having proclaimed any principle or made any application of any established principle unduly favorable to the railway litigants in state rate cases. That Commission, in its investigation, was driven to a declaration of principles for the apportionment of operating expenses between line and terminal which are almost identical with those applied in the formula designated as Plaintiff's Exhibit No. 1.

We quote from the Fifth Annual Report of the Corporation Commission of the State of Oklahoma, published by authority of the State what it found to be the control-

ling principles involved in the apportionment of freight operating expenses between the line and terminal service for use in apportionment between state and interstate traffic. At page 363 of this Fifth Annual Report terminal expenses are defined as follows:

> "What is known as terminal expense is that expense which accrues in receiving shipments from consignors and in loading the same, setting the car, or furnishing the facilities for and unloading the same and the delivering of the commodity to the consignee, together with the switching service at either the originating or destination terminal necessary to complete the transportation of the commodity.
>
> The above items, together with such damages as may accrue at terminals, either to property or commodities shipped and all services performed therein include the entire terminal service. If the terminal cost should be accurately separated from the transportation cost, this most difficult problem would be easily solved."

On page 406 it is said:

> "The maintenance of depots should be cared for by terminal expenses, as herein indicated."

On page 408 it is said:

> "The expense of maintaining and operating the house or team track and industry tracks, we have charged to terminal expense."

On page 409 it is said:

> "The expense of maintenance of locomotives should be divided between yard service, local and through service expense. The expenses of the yard locomotive should be divided on the basis of the time used in setting cars for loading and unloading and other switching service. That is, the expense should be divided between terminal and transportation service."

On page 411 it is said:

> "General expense has been apportioned between terminal expense and other services in the ratio mentioned under the various accounts."

At page 414 it is said:

> "All the expense of station employes and equipment should be charged to terminal expense, except that portion of the time of operator and other employes, which is devoted to train movement service."

At page 416 it is said:

> "The tonnage referred to as less than carload is usually distributed in 'peddler' cars, which in fact are not switched out of the trains, but while one brakeman and the engine crew are performing terminal service on strictly carload commodities, the other train and station employes unload the less than carload business from the 'peddler' car."

At page 414 it is said:

> "Grouped under this item of incidental terminal expense are injuries to persons engaged in terminal service, loss and damage to freight; proportion of the cost of repairs to locomotives; proportion of general expenses; superintendence of maintenance of equipment and transportation, and proportion of the charge for engine house expense. There was also included a portion of expense charged to damage to property, shop machinery and tools, and renewals and depreciation of locomotives."

It will be observed that the Oklahoma Corporation Commission's definition of terminal service is substantially identical with that found in Exhibit No. 1. Considering the challenge made of the apportionment of operating expenses between line and terminal as an unfair distribution, we feel that in justice to ourselves and to the court that attention should be directed to the fact that the foundation principles upon which this apportionment rests were recognized and applied by state authorities prior to their incorporation in Exhibit No. 1.

Intrastate Freight Rates and Passenger Fares Effective in Arkansas 1908 to 1913 inclusive.

(Exhibit No. 33.)

Exhibit 33 contains a statement of freight rates and passenger fares in force at the different periods of time involved in this litigation, and covered by the evidence and exhibits. The freight rates in effect for the various periods were as follows:

For the fiscal year ending June 30, 1908, and up to and including November 1, 1908, the Arkansas Commission's tariff No. 3. From November 2, 1908, to May 31, 1909, the railroad's own freight rates. From June 1, 1909, to July 27, 1913, the court's tariff.

The passenger fares in effect for the various periods were as follows:

June 30, 1907, to October 18, 1908, 2c per mile; October 19, 1908, to April 30, 1909, 3c per mile; from May 1, 1909, to November 26, 1910, 2½c per mile; from November 27, 1910, to July 14, 1913, 3c per mile.

The actual revenues, therefore, for the periods under consideration, except the four months of 1907, are not those earned under the prescribed freight rates and passenger fares, but were earned upon substantially higher rates. Consideration of these facts is of the very greatest importance in connection with the rate of return earned by the plaintiff from its intrastate freight and passenger traffic for the four fiscal years of 1910 to 1913, inclusive.

STATISTICS COMPILED AND TESTS MADE IN MONTHS OF NOVEMBER AND DECEMBER, 1913, FOR THE PURPOSE OF ESTABLISHING THE COST RELATIONS BETWEEN INTRASTATE AND INTERSTATE TRAFFIC.

The method of conducting the test and of compiling statistical information therefrom, and also from the current records of the company, is concisely explained in the text of Plaintiff's Exhibit Nos. 2 and 3. This text is fully verified by the evidence given by Mr. Hamilton in explanation of these exhibits, found for Exhibit No. 2 at pages 75 to 79 of the record, and for Exhibit No. 3 at page 79 of the record.

For the reason that the narrative accompanying these two exhibits is concise, explicit and complete, we feel that the methods and results can be more briefly and more directly presented by quoting same.

The text or narrative accompanying Exhibit No. 2 is as follows:

EXHIBIT No. 2.

Preparation of Data Used as Factors in the Allocation of Expenses, Taxes, Rentals and Hire of Equipment, to the State of Arkansas, and Between "Line" and "Terminal." Freight and Passenger, Intrastate and Interstate, Mail and Express.

The allocation of expenses, taxes, rentals and hire of equipment to Arkansas, and their division between freight and passenger, intrastate and interstate, mail and express, were made by the use of such factors as were obtainable, and which may be properly termed USE UNITS. The application of these factors to the purposes indicated above, is set forth in the formula filed as Exhibit No. 1, and in the explanations and descriptions accom-

panying the exhibits, in which the expenses, etc., as allocated, are set forth.

Wherever possible, divisions have been made upon factors based upon actual data as to the operation of the railroad, secured either from the records regularly maintained by the railroad in the ordinary conduct of its business, or by special investigations and tests conducted along with the actual everyday operation of the railroad.

Wherever, as stated above, the divisions made were based upon an analysis of the records regularly kept by the railroad, such analysis has in each instance, been carried back to the original authentic source of entry in the railroad's records.

It is proposed here to set forth the methods employed in gathering the data used in the preparation of exhibits in this case, to secure which, special investigations and tests were necessary.

In making the tests and investigations referred to, a special organization was created upon each operating division of the railroad having mileage within the State of Arkansas. These division organizations were placed in charge of a man drawn from the Division Superintendent's organization, who had had long practical railroad experience and was thoroughly familiar with the operating conditions upon the division of which he had charge. These men were carefully schooled in the requirements of the work entrusted to them. It was their duty to keep in daily touch with the conduct of the tests and investigations being made under their supervision. They were all brought together at a central point at frequent intervals, and examined concerning the conduct of the work entrusted to their charge. Interchanges of views between them were had at these meetings concerning the

work in hand, and thorough instructions given them by the representative of the railroad in general charge of the work, upon all phases of it.

In addition to the divisional supervision of the work described above, the representatives of the railroad in general charge of the work, paid frequent visits to the various divisions in order to add their personal supervision to that given to the work locally by the divisional organization. Careful and explicit instructions, in most instances in print, were given to all subordinate employes engaged upon the work, to cover the phases of the work entrusted to them. All of these subordinate employes were carefully instructed as to the proper conduct of the work entrusted to them before being sent into the field. All such subordinate employes were practical experienced railroad men, and were chosen with regard to their fitness for the particular work entrusted to them.

This statement is made here in order that it may be understood that every care was exercised to safeguard the accuracy of the data collected.

Freight and Mixed Train Performance.

The data of this character collected covered all trains moving wholly or partly within the State of Arkansas during the entire months of November and December, 1913.

The data as to train performance was collected upon a special form provided for that purpose, which is offered in evidence as Exhibit 2-A.

Clerks were placed upon each local freight and mixed freight train to prepare this report. Special clerks were placed in each yard office where through freight trains began or ended their runs. These special yard clerks prepared the report covering the train in its entirety as

it left the terminal. The conductors in charge of through trains were required to enter on the report all of the required data concerning cars or contents of cars, both picked up and set out between the termini of their run. Special yard clerks placed at the arriving terminal were required to enter upon the report all of the required information covering shipments picked up by the through train after leaving the departing terminal, and which was carried into the arriving terminal.

All data entered upon the report, except the calculations as to mileage and ton mileage, was acquired either by the clerk upon the train, the yard clerks at the terminals, or the conductor in charge of the train, as outlined above, directly from the actual waybills covering freight in the train, and other sources of information at first hand.

The numbers of engines and the numbers and initials of cars, were taken from the equipment as it was handled in the train.

The tare weights of cars were taken from the stenciling upon the cars themselves, except in instances where no such weights were stenciled upon the cars, and in these instances, the actual tare weights of the cars at their last weighing were obtained by the central office of the railroad from the owners of the cars. This refers to both, loaded and empty cars.

All information required by the report (Exhibit 2-A) to be taken from the waybills covering the freight, was so obtained.

In the case of cars not accompanied by regular waybills (such regular waybills having been mailed overhead to destination or to the end of the division), and which were moved upon card or slip waybills, which ordinarily would not yield the information requisite for this special

train performance report, agents were required to show upon the face of the card waybill the actual tonnage contained within the car, classified as between intrastate, interstate and company material, having in mind in the classification between state and interstate, the movement of the freight with relation to the boundaries of the State of Arkansas. Special instructions as to showing this information upon card waybills were given in circular form to all agents on the railroad authorized to make such card waybills. Copy of this circular is offered in evidence as Exhibit 2-B.

The train performance report form (Exhibit 2-A) carries upon its reverse side, explicit instructions as to its preparation, and detailed illustrations of the classification of tonnage as between intrastate, interstate and company material, with reference to its movement within the boundaries of the State of Arkansas, illustrations of several specific movements being contained therein.

The weights shown by train clerks, yard clerks and conductors, classified as between intrastate, interstate and company material, upon this report (Exhibit 2-A), were those appearing upon the face of the waybills at the time they were in their possession.

Upon receipts of these reports at the general offices of the railroad, they were carefully examined as to the accuracy of their preparation, a force of specially trained men being employed for this purpose.

The original weights of the contents of the cars shown upon the report by train clerks, conductors and yard clerks, were, in so far as carload freight is concerned, all checked against the railroad's regular scale station reports, and the original waybilled weights, all corrected to basis of the actual scaling.

The mileage each shipment was hauled in each train

was placed upon these reports (Exhibit 2-A) by expert mileage clerks at the general offices of the railroad, and in the same office the application of this mileage to the tonnage upon the report was made, translating the tonnage into ton mileage.

At this same central office, the train and equipment mileage in each separate train was computed.

A careful check was made against train dispatchers' records to see that all freight and mixed trains moving wholly or partially within the State of Arkansas, during the months of November and December, 1913, were covered by the train performance reports (Exhibit 2-A), recieved at the general office of the railroad.

From these reports were drawn separately for through and local freight trains, and for mixed trains, the engine miles and the gross and net ton miles, the latter being classified as between intrastate, interstate and company material, the gross and net ton miles of mixed trains being classified as between the freight equipment and its contents and passenger equipment.

Passenger Train Performance.

The data of this character collected, covered all trains moving wholly or partly within the State of Arkansas for the entire two months of November and December, 1913.

It was not necessary to place special representatives upon passenger trains in order to secure accurate first hand data as to their performance.

The data required was the passengers carried one mile within the State of Arkansas, classified as between revenue intrastate and revenue interstate, and non-revenue segregated according to the character of passenger vehicle in which they were transported; that is, Pullmans and other passenger-carrying cars, separately.

It was found practicable to secure the desired information accurately from the ticket and cash fare collections turned in to the auditor by conductors and train auditors, supplemented by certain special reports hereinafter described.

A special force of men was employed in the general offices of the railroad to examine, immediately upon their receipt, the ticket and cash fare collections and special reports, made by conductors and train auditors.

An examination of the tickets, cash fare receipts and trip passes *lifted* by conductors and train auditors on each train was made, and from these the passengers carried on transportation *lifted*, on each train, were classified as between revenue intrastate and revenue interstate, and non-revenue, and the distance which each passenger had traveled on each train, determined.

Special reports covering transportation honored *but not lifted*, such as tickets good for a journey beyond the end of the run of the condutor or train auditor on a given train, or annual or other card free transportation retained by the passenger, were required of all train auditors and conductors charged with the collection of transportation credentials on each train running wholly or partially within the State of Arkansas. Samples of these special reports are offered in evidence as Exhibits 2-C and 2-D.

A special envelope was provided in which conductors and train auditors were required to remit separately, for each train carrying Pullman cars, the transportation lifted by them from passengers riding in such cars. By this means it was possible to get a separate record of Pullman passengers one mile, classified as between revenue interstate, revenue intrastate and non-revenue. A sample of this envelope is offered in evidence as Exhibit 2-E.

The special reports (Exhibits 2-C and 2-D) hereinbefore referred to covering passengers riding on transportation honored but not lifted, carried all of the information requisite to the proper classification of passenger travel, as between intrastate, interstate and non-revenue, and coach and Pullman travel, which would have been afforded by a visualization of the tickets, etc., had the same been lifted.

With this preparation, a special force of men employed in the general office of the railroad, were enabled to make the desired classification of passenger mileage upon all trains running wholly or partly within the State of Arkansas. This data was collated upon a special form prepared for that purpose which is offered in evidence as Exhibit 2-F.

The number of passengers and the extent of their journey on each individual train, the character of equipment in which they were transported and a classification of the number of passengers as between intrastate, interstate and non-revenue, Pullman and other passenger-carrying car travel separately, was entered upon this form.

Specially trained mileage clerks entered upon this form, the mileage traveled, by each passenger, and from this applied to the data derived from the ticket cash fare and pass collections and train auditors' and conductors' special reports (Exhibits 2-C, 2-D and 2-E) the passengers transported one mile, revenue intrastate, revenue interstate and non-revenue, Pullman and other passenger-carrying car travel separately, within the State of Arkansas, were ascertained.

The force employed in the preparation of this data were specially trained men whose experience peculiarly fitted them to accurately perform the work assigned to

them, several of them having formerly been members of the railroad's regular train auditor staff.

The instructions as to the preparation of the special reports (Exhibits 2-C, 2-D and 2-E) required of train auditors and conductors, were issued in circular form. Copy of this circular is offered in evidence as Exhibit 2-G.

Report of Train Stops and Terminal Delays.

The data of this character collected covered all trains operated wholly or partially within the State of Arkansas during the entire months of November and December, 1913.

In complying with the provisions of the formula filed as Exhibit No. 1, it became necessary to determine what proportion of the time of trains upon the road was properly chargeable to "terminal" service and to "line" service within the meaning of the formula. To this end conductors of all freight, passenger and mixed trains, were required to render a report covering each trip on a form, sample of which is offered in evidence as Exhibit 2-H. Full instructions for the preparation of this report are carried upon the back of the form.

The report showed upon its face the time devoted to station service, and under the heading of "Terminal Delays" the time devoted to switching at the termini of the train's run. The aggregate of the station service time and switching time at train terminals, was considered as "terminal" service time.

The percentage relation of this terminal service time and the percentage relation of the balance of the train's time upon the road, plus the delay at the termini of the run other than for switching purposes, to the total time of the train upon the run plus all terminal delays, were determined, and on these percentages were divided

between "line" and "terminal," all direct train operation expenses, namely:

Wages of enginemen and trainmen, fuel, water, lubricants and supplies for road locomotives, train supplies.

The percentage relation of "line" and "terminal" service of trains upon the time basis outlined above, was ascertained in the aggregate for all trains operating wholly or partly within the State of Arkansas, but in separate groups for through freight, local freight, mixed and passenger trains.

This recapitulation and application of the data obtained from these conductors' reports was prepared in the general offices of the railroad by a special force of men employed for that purpose.

Switch Engine Foreman's Work Report.

The data of this character collected covered the operation of all switch engines in all yards within the State of Arkansas for the entire months of November and December, 1913.

In order to divide yard expense between "line" and "terminal," and freight and passenger, as provided for in the formula filed as Exhibit No. 1, it became necessary to determine the time devoted to each class of service, in all yards, within the State of Arkansas. For that purpose switch engine foremen in charge of all switch engines in such yards were required to render a special report daily covering the entire service time of the crews in their charge.

Sample of this report is offered in evidence as Exhibit 2-I.

Instructions as to the preparation of this report are given upon the reverse side thereof.

Switch engine foremen were required to indicate for

each half hour, the character of service in which the engines and crews under their charge were engaged during the major portion of that half hour, in accordance with the classification prescribed in the report form.

The service time as classified, on these reports was grouped in the general office of the railroad under the headings of "line" and "terminal" and "freight" and "passenger," as follows:

Line Freight.

Making up and breaking up trains, handling cars for icing.

Terminal Freight.

Handling cars (receiving a road haul) for loading and unloading at stations.

Switching cars to and from connecting lines.

Handling cars which were both loaded and unloaded within switching limits of the same yard.

Common to Freight "Line" and "Terminal."

Handling freight cars to and from repair tracks.

Passenger Line.

All passenger switching.

Common to Freight and Passenger, "Line" and "Terminal."

Dead time.

This "dead" time being the unemployed time of the engine crew during regular service hours, was considered as proportionately chargeable to all of the actual services performed by the engine, and was spread over them accordingly.

Towerman's Report of Trains Passing Interlockers.

Each employee in charge of the operation of an interlocker within the State of Arkansas was required to make report for each day during the months of November and December, 1913, of all trains passing over the interlocker in his charge. These reports were rendered upon a special form provided for that purpose which is offered in evidence as Exhibit No. 2-J. Full instructions for the preparation of this report is given on its face.

Trains and engines passing over each interlocker were classified between "passenger," "freight," "mixed," "work and wreck," and "switch" service.

The switch service was classified as between freight and passenger according to the character of equipment hauled by switch engines on each individual trip over the interlocker.

These reports were all recapitulated in the general office of the railroad.

The number of work and wreck trains passing each interlocker were spread over the freight, passenger and mixed trains using the interlocker on basis of the number of trains of each class. A division of the use of interlockers as indicated above was made direct between freight and passenger service (with the apportionment of switch and work service indicated above), the mixed train proportion of use of interlockers being divided between freight and passenger on basis of the freight and passenger gross ton miles in such trains. Having in this way determined the number of train usages of each interlocker chargeable to freight and passenger services (and all of such usage was charged to "line" service), the percentage relation of the number of usages chargeable to freight and passenger service was determined and applied to the division of the expense of maintenance and

operation of each interlocker between freight and passenger "line" service.

Tally of Trains Crossing Drawbridges and Passing Points Where Crossing Protection Was Maintained.

Formula filed as Exhibit No. 1 provides that the maintenance and operation of drawbridges and crossing protection devices, and the cost of maintaining flagmen at crossings, shall be divided between freight and passenger on basis of the number of trains of each class passing over each drawbridge or each crossing.

In order to accomplish this an analysis of dispatchers' train sheets was made in the office of Division Superintendents, whose territory was wholly or partially within the State of Arkansas and the number of trains of each class passing over each drawbridge and crossing ascertained therefrom. The number of mixed trains passing over drawbridges and crossings was apportioned between freight and passenger service on the basis of the gross ton miles of each class in mixed trains. After having in this way ascertained the use made of drawbridges and protected crossings by freight and passenger service, the data so obtained was used as a basis for factors on which to divide the expense of operating and maintaining these drawbridges and crossings between the two services. No portion of this expense was charged to "terminal" service, because, by reason of the location of the drawbridges and protected crossings in Arkansas, no "terminal" service use was made thereof.

Special Report of Station Agents, Used as a Basis for Division of Station Expenses.

In complying with the provisions of the formula, filed as Exhibit No. 1, agents at all stations within the State of Arkansas were required to render a special report

of station expense and performance for the months of November and December, 1913. Sample of this report form is offered in evidence as Exhibit No. 2-K. Instructions for the preparation of this report are given on the reverse side thereof.

Special representative was sent out to confer with all agents in the State of Arkansas and to supervise their preparation of these reports to the end that all such reports might be correctly prepared and upon a uniform basis.

For the purpose of preparing this special report, the agent at each station was required to make a study of the time devoted by himself and the employees under his charge to freight, passenger, mail, express and telegraph service. On basis of this time study, each agent was required to apportion to the various classes of service, the actual wages paid at his station.

He was also required to prepare a record of the number of tons of freight received at, forwarded from and transferred from car to car at his station, classified as between intrastate and interstate and company material, less than carload and carload separately. He was also required to tabulate the number of cars received at and forwarded from his station loaded with carload freight, the number of cars received and forwarded loaded with less than carload freight, and the gross weight (cars and contents) of all such cars, all classified as between intrastate, interstate and company material. He was also required to show (although the report does not call for this) the number of consignments of intrastate, interstate and company material freight received at and forwarded from his station.

The cost of supplies and other expenses of each separate station were determined from original records

in the offices of the Division Superintendents, and there entered on the report rendered by each agent, being divided between freight, passenger, mail, express and telegraph services in proportion to the division of wages made by the agent on basis of his time study. This division, of the cost of supplies and expenses, is provided for in the formula filed as Exhibit No. 1.

The division of wages and station supplies and expenses described above, and made at each individual station within the State of Arkansas, was recapitulated, and such tabulation furnished the division of these expenses between the various classes of service for the state as a whole.

The data as to tonnage and cars handled, prepared by the agent as hereinbefore described, was used as the basis for factors on which to divide various items of "terminal" expense as provided for in the formula, filed as Exhibit No. 1.

Special Reports of Labor and Material Charges Required of Section Foremen.

In order to comply with the provisions of the formula, filed as Exhibit No. 1, and the modifications thereof adopted by the St. Louis and San Francisco Railroad, as set forth on pages 4 and 4-A of the formula, all section foremen having charge of tracks within the State of Arkansas were required to keep a special record of labor expended and material used upon the section of the railroad under their charge for the entire months of November and December, 1913. Special representative was sent out on each division of the railroad to confer with each section foreman and to classify all of the tracks under his charge in accordance with the formula, filed as Exhibit No. 1, and to so arrange his time and material books that the charges for labor and material on each

separate track or class of tracks entered in these books each day were classified as between "line," "terminal," "freight," "passenger" and "common," as provided for in the formula. From a recapitulation of these time and material books made in the general office of the railroad, the data of this nature as to maintenance of way and structures expenses required for compliance with the provisions of the formula was secured.

The text accompanying Exhibit No. 3 is as follows:

EXHIBIT No. 3.

Description of Analyses Made of the Company's Records, Regularly Maintained in the Ordinary Conduct of Its Business, to Obtain Data To Be Used as Factors in the Allocation of Expenses, Taxes, Rentals and Hire of Equipment to the State of Arkansas, and Between Line and Terminal, Freight and Passenger, Intrastate and Interstate, and Mail and Express.

The allocation of expenses, taxes, rentals and hire of equipment to Arkansas and their division between freight and passenger, intrastate and interstate, mail and express, were made by using all such factors as were obtainable, and which may be properly termed "USE UNITS."

The application of these factors to the purposes indicated above, is set forth in the formula, filed as Exhibit No. 1, and in the explanations and descriptions accompanying the exhibits in which the expenses, etc., as allocated, are set forth.

Wherever possible, divisions have been made upon factors based upon actual data as to the operation of the railroad, secured either from the records regularly maintained by the railroad in the ordinary conduct of its

business, or by special investigations and tests conducted along with the regular every-day operation of the railroad.

A full description of these special investigations and tests and the methods employed therein, has been set forth in Exhibit No. 2, and Exhibits 2-A, 2-B, 2-C, 2-D, 2-E, 2-F, 2-G, 2-H, 2-I, 2-J and 2-K.

It is purposed here to set forth the methods employed in securing data from the ordinary records of the company upon which to base factors for use in complying with the formula filed as Exhibit No. 1.

The analyses of the company's ordinary records made for the purpose above stated, have in each instance been made from original authentic sources of entry in such records, by a special force of experienced men employed for that purpose.

Location of Expenses, Taxes, Rentals, and Hire of Equipment, to the State of Arkansas.

For this purpose an analysis was made of accounting and related records kept in the offices of the Division Superintendents, and the General Auditor. All original bills, vouchers and other original sources of record were examined in detail and such charges and credits as located themselves entirely to the State of Arkansas were so charged or credited. All charges and credits assignable partially to Arkansas and partially to other states were analyzed and a proportion thereof assigned to Arkansas upon the bases provided in the formula filed as Exhibit No. 1, and the modifications thereof adopted by the St. Louis & San Francisco Railroad, also set forth in said exhibit. This assignment of expenses, taxes, rentals and hire of equipment to the State of Arkansas as outlined above, was made for the entire year ended June

30, 1913, and also for the months of November and December, 1913.

Allocation of Expenses Assigned to Arkansas Between Line and Terminal, Freight and Passenger, Intrastate and Interstate and Mail and Express.

These allocations were made in accordance with the provisions of the formula filed as Exhibit No. 1, and the modifications thereof adopted by the St. Louis & San Francisco Railroad, as set forth in said exhibit. In some instances, such allocations were made direct from original sources of entry (vouchers, bills and kindred sources), in others, the railroad's regular accounts kept in accordance with the requirements of the Interstate Commerce Commission, themselves afforded the means of making these allocations direct, and in other instances the factors obtained through special tests and investigations (as described in Exhibits 2 and 2-A to 2-K, inclusive), were employed in making these allocations, and in still other instances, factors derived from the railroad's records regularly kept in the ordinary conduct of its business were employed.

A description of the method of preparing the factors derived from the railroad's ordinary records is given hereinafter.

Freight Car Miles, Passenger Car Miles, Work Car Miles, and All Classes of Train Miles.

Wherever train or equipment mileage figures (as described above), for a period other than for the months of November and December, 1913; (the similar data for those two months being secured as outlined in Exhibit No. 2), were used as factors, the mileage figures so used were those regularly compiled by the railroad in the office of its car accountant. These mileage figures are

derived by the car accountant from original reports made by officers and employees in direct charge of the operation of trains, engines and cars. Wherever such reports cover movements entirely within the State of Arkansas all such movements were charged to that State. Wherever such reports covered movements of train or other units across the boundaries of the State of Arkansas, an analysis of each individual report was made, and an actual assignment of train, engine or car mileage to the State of Arkansas made therefrom.

Net Tons and Net Ton Miles and Passenger and Passenger Miles.

Wherever net ton, net ton mile, passenger, or passenger mile figures for a period other than the months of November and December, 1913 (the similar data for those two months being secured as outlined in Exhibit No. 2), were used as factors, the tonnage, ton mileage, passenger and passenger mileage figures so used were those regularly compiled by the freight and passenger auditors of the railroad for its own usual purposes, and were recorded in the regular statistical records of the railroad.

The railroad, for purposes of reports required by the State regulating bodies, keeps in its records from month to month, an actual assignment of net tons and passengers handled, and net ton miles and passenger miles hauled, prepared from original sources, and assigned upon bases of actual allocation to the various States. Wherever figures of this character located to the State of Arkansas have been used in complying with the formula filed as Exhibit No. 1, they have been such figures compiled currently each month by the railroad as set forth above.

Car-Foot Miles.

In complying with the provisions of the formula filed as Exhibit No. 1, it became necessary to determine the amount of space used in passenger trains within the State of Arkansas during the months of November and December, 1913, for the transportation of passengers in Pullman cars and in other passenger-carrying cars, separately, and for passenger auxiliary service in baggage, dining, and cafe-observation cars, and for mail and express service. From the passenger train wheel reports regularly rendered by conductors in charge of such trains, the mileage of each car moving in trains within the State of Arkansas during the period indicated above, was ascertained. This mileage of each individual car was multiplied by the actual inside length of the car in feet and inches, determined from the railroad's equipment records, and in the case of Pullman cars, from the Pullman Company's records, the product of such multiplication being expressed in car-foot miles.

The car-foot miles of each individual car were assigned according to the class of service (as outlined above), in which it was used upon each individual trip. In the case of cars employed in two or more services, the division between these various services (individual trips being considered separately) was made according to the number of services in which the car was employed on each individual trip. As illustrations: A baggage car assigned for the transportation of both baggage and express was counted one-half baggage and one-half express. A baggage car assigned for the transportation of baggage, express and pouch mail was counted one-third each to baggage, mail and express. Combination cars assigned for the transportation of baggage, mail and passengers were counted one-third each to baggage, mail and passenger carrying services. These illustrations

will serve to indicate the basis followed, the same principle being followed where a car was assigned to other combinations of services on a single trip.

The car-foot mileage of passenger train equipment in mixed trains was divided between the various classes of service upon the same basis as outlined for equipment in straight passenger trains.

Engine Ton Miles.

In the division between freight and passenger, of some portions of maintenance of way expense charged to line service, the engine ton mile unit was used.

The engine ton mile unit referred to may be defined as follows: It is the total weight of the engine and its tender plus the average lading of the tender with fuel and water, multiplied by the number of miles run by the engine. In preparing this unit for use in the division of expenses indicated above, for the months of November and December, 1913, the mileage of individual engines was secured, in freight service from the train performance report of which sample is filed as Exhibit No. 2-A, and in passenger service from the regular passenger train wheel reports of the railroad. This refers solely to the mileage made by engines within the State of Arkansas. In translating these engine mileages into engine ton miles, the actual weight of each engine and tender was ascertained from the company's equipment records, and there was added thereto 66 2/3 per cent. of the loading capacity of the engine tender for coal and water, reduced to a tonnage basis, 66 2/3 per cent. being the approximate average load of fuel and water carried at all times on an engine's tender when in actual service. The total weights of engines and their loaded tenders so obtained were multiplied separately for each individual locomotive in each class of service, by the mile-

age of such engines, the product being the freight, passenger and mixed engine ton miles.

The mixed train proportion of maintenance of way expenses ascertained on the engine ton mile basis as outlined above, was subdivided between freight and passenger upon basis of the gross ton miles of freight and passenger equipment and contents in such trains, these freight and passenger gross ton miles in mixed trains having been determined on the basis set forth in Exhibit No. 2.

Wages and Fuel—Local and Through Freight Trains and Mixed Trains.

Wages paid local freight train and engine crews, and through freight train and engine crews, separately, were determined from the original time slips and other time-keeping records of the company, and represent, as set forth in subsequent exhibits, an actual allocation to the two classes of trains.

The charges for fuel consumed by local and through freight train engines, separately, were determined as a matter of actual allocation from the company's regular fuel performance records which afford information as to the actual consumption of fuel by each locomotive on each trip.

Same direct allocation of wage and fuel costs as is described above, was made for mixed trains, and the mixed train charges of this character divided between freight and passenger on the basis provided in the formula, the freight proportion of such charges being added to similar charges for local freight trains. This concludes the text of Exhibit 3.

These two exhibits disclose the method employed in the compilation of the statistical information necessary to make the application of the provisions of the formula.

The application of the units and bases developed in accordance with Exhibits Nos. 2 and 3 are applied in subsequent exhibits (to which attention will be called later) to bring out the final results as to the cost of conducting the state freight and passenger business in the State of Arkansas. It may be noted here, however, that the information gathered in accordance with Exhibits Nos. 2, 2-A to 2-K and 3 was compiled and stated in percentage forms, for convenient use as factors for the various apportionments in Exhibit No. 6.

Mr. Hamilton testified somewhat in detail as to the application of the factors computed from the information compiled in accordance with the plans outlined in Exhibits 2 and 3, the factors being set forth in detail under the title "Units and bases prescribed by the formula for apportionment of expenses and values," and that these various units and bases were fair and reasonable use units and bases.

The Test Period.

On account of the very great importance of the test made for the purpose of determining the relative cost of conducting the intrastate and interstate business of the railroad within the State of Arkansas with reference to the period covered by the test, as well as the manner of making it, we wish to call the attention of the court in detail the evidence, and the conditions disclosed by the exhibits, bearing on the fitness of the period used for the purpose of reflecting the average condition throughout the year. This proceeding was brought on July 18 and the injunction was granted on September 3, 1908. The business and operations of the months of September, October, November and December, 1907, during which time the inhibited freight and passenger rates were in force, were used on the application

for a temporary injunction for the purpose of showing the effect of those rates upon the earnings of the railroad. Other similar suits were brought at the same time, and evidence was taken in the cases of the St. Louis, Iron Mountain & Southern Railway and the St. Louis Southwestern Railway, and those cases brought to final hearing on May 11, 1911. The evidence in this case was not taken until after the decision of those cases by the Supreme Court (*Allen* v. *St. L. I. M. & S. Ry. Co.*, 230 U. S.), on June 16, 1913. The exhibits prepared in this case cover the business of the four months' period in 1907, and the fiscal years 1910, 1911, 1912 and 1913. The year 1909 was not included because of the difficulty of obtaining a part of the records of that year. The manner of conducting the test we think has been sufficiently described in what has been said heretofore, and in the exhibits and testimony referred to. As illustrating the thoroughness with which it was conducted, we here call attention to the fact that in the division of the terminal expense each individual station and yard in the state was treated separately, and the local condition of each yard is reflected in the details of the division, and, in the matter of switching by local trains, which has heretofore been determined by estimates and the opinions of witnesses, the actual time devoted by each local freight train to switching during the test period was ascertained. On this point we call attention to the evidence of Mr. Hamilton, pages 88 and 89 of the record.

We will now consider the evidence in connection with the representative character of the two months in which the test was made. A test of this character is necessarily limited in time. It can not be prolonged indefinitely on account of the very large expense involved. The im-

portant matter is the selection of a representative period in which to make the test.

On this point the testimony of Mr. Nay was taken, and, in connection with his evidence, we deem it proper to call attention to his well known character and qualification to speak on such a subject. His experience in railroad service began in 1883 as statistical clerk in the accounting department of the Missouri Pacific Railway Company; he later became traveling auditor for the St. Louis Southwestern Railway in Missouri, Arkansas and Louisiana, and later chief clerk to the general auditor of that road. For a few years he was auditor of the Minneapolis & St. Louis and the Iowa Central railroads. Since 1903 he has served with the Chicago, Rock Island & Pacific Railway Company as assistant comptroller, general auditor, and, during the last five years, comptroller of that system. He is everywhere recognized as a man of great probity of character and of unusual skill and ability, as is indicated by the station he has reached in the line of his employment in railroad service.

He testified that the test period used fairly represented the conditions throughout the year for the purposes for which the test was made; that the months of November and December were fair average months. That a similar test was made on the lines of the Chicago, Rock Island & Pacific Railway; it was first made for two months covering September and October. The results of this test were to be used in a case pending in Oklahoma involving rates in that state. The hearing of the case was postponed, and the test continued through the months of November and December, and a comparison of the work showed that the results of the four months were not substantially different from those of the two months; that no conclusion, or element, of the two months would have been different from what it was on the basis of the four.

He regarded the months of November and December, if anything, as rather favorable to the state, owing to the large movement of cotton in those months, practically all of which is interstate traffic and would add to the volume of that traffic over other periods in which but little of that commodity moved; that the tests are for the purpose of determining the relative proportions of intrastate and interstate, and through and local business, and when you cover a period of two months you have a pretty representative period in almost any part of the year, unless you select the smallest or the largest month. The test period is not an attempt to establish that the earnings are going to be more or less. Its object is to fix a cost relation between the different classes of traffic which exists in other periods. He stated that when figures are compiled, with all the detail that is provided in the formula for a two months' period, it is fairly representative of the business as it runs along from year to year, unless it is shown that conditions entirely different existed in other periods. That it would be more satisfactory if we had the results of a whole year, but it would cost probably a million dollars to do it. When we have found by actual experience that the four months' result has turned out to be substantially the same as the two months', he thought he might safely say that the two months are representative. In speaking of conditions of operation and traffic which should be considered in determining the normality, or representative character of the period employed in making the test, Mr. Nay stated that there should be similarity in the following conditions:

Similarity of mileage of the road in the two or more periods.

There should be similarity in the load, or number of tons and passengers per train.

In the average length of haul of freight or passengers. If that has remained substantially the same, it would indicate a similarity in the traffic conditions.

The relation of the empty car movement to the loaded car movement should be considered, and there should be a similarity in that respect. If there were a decided difference in that percentage from one period to another, it would indicate that there was some difference in the conditions in the two periods. If they are substantially the same, that would indicate similarity.

There is also the relation of the intrastate and interstate traffic. If they are substantially the same, that is, if substantially the same percentage of the total traffic was intrastate and interstate, it would indicate similarity of conditions.

Another matter is the proportion of the expenses, and the traffic, in the state to the total of the road. If in one period the expense should be, say, 15 per cent. of the total, and the traffic should be, say, 18 per cent., and in another period the expenses should be 13, 14, 16 and 17 per cent., and the traffic be within a few percentages, it would indicate similarity of conditions. Possibly there may be others, but those mentioned are what occurred to me when I gave the matter thought. It is not expected that in operating statistics different periods would be just the same, but they should be similar. No one of the conditions standing alone could be controlling, but they should all be taken in connection, and if, taken together, the relation between the road mileage was about the same, between intrastate and interstate, the empty car mileage and the loaded, etc., were the same, then I should think one period might fairly be taken as representative of another. (328, 380, 441)

It is apparent that as to most of the normality factors referred to a difference in the relations in the different

periods would affect the relative cost of intrastate and interstate business only remotely. The relative length of haul is the only factor that directly and materially affects the cost relations as between state and interstate traffic, and, as is elsewhere demonstrated, the difference in the relative length of haul in the test period and in the periods to which the test period results are applied results uniformily more favorable to the state than if the relative length of haul had been identical for all periods.

Mr. T. A. Hamilton testified that he made investigation for the purpose of testing the normality in the movement of freight traffic during the various periods covered by the exhibits in this case. The result of his investigation is embodied in Exhibit 34, which shows the average miles per freight car per day made on the railroad for the fiscal years ending June 30, 1908 to 1913, inclusive; also the four months ending December 31 in the years 1907 to 1913, inclusive; also for the months of November and December of the latter year, which was the test period. There is no material variation shown in these exhibits, the fluctuations not exceeding two or three miles on an average, which is negligible. In November and December, 1913, the average per day was 22.29 miles, while during the four months ending December 31, 1907, it was 22.18. He testified that the table embraced all of the cars that were on the railroad, whether moving or standing still, and all the mileage that was made each day by all the cars which actually moved, and that there could be no better index of the normal movement of freight traffic than the average miles made by the freight cars each day. He further testified that he knew from his own knowledge that there was no congestion or abnormality. (448-9)

The percentage of empty freight car mileage to the total freight car mileage in Arkansas during the four last

months of 1907 was 29 per cent., and during November and December, 1913, it was 29.41, being practically the same. (450)

Exhibit 37 shows the road mileage operated in Arkansas during these various periods, and it is practically unchanged, there being an addition of about 5½ miles in the year 1911, and an increase of 20 miles on the entire railroad, thus showing there had been no change in the territory served by the road. (450-1)

Exhibit No. 38 shows the train miles, net tons, revenue freight one mile, and revenue passengers one mile, per mile of road per day in the State of Arkansas, and Exhibit 39 shows the average haul of freight and passengers, intrastate and interstate, in the state during the periods covered by the exhibits, the latter exhibit being in the form of a graphic chart. The witness called attention to the fact that this exhibit did not show the average haul for the months of November and December, 1913, that data having been shown for the six months ending December 31st, of which those two months were a part, and explained that the factors necessary to produce the average haul figure for the months of November and December were not available. He was asked to explain the bearing these two exhibits have upon the question of normality, and stated:

> "On that general proposition I think it should be said that nothing short of an almost miraculous coincidence would produce the same operating conditions upon any given railroad or section of railroad in any two periods, that is, exactly the same operating conditions. There must always be some difference in various periods. Such differences are shown in some of the exhibits that we have here, and, perhaps, notably in these two, but these differences must be considered, it seems to me, not in and of themselves, but in the light of their effect upon the problem that we are endeavoring to solve here.
>
> We have taken the month of November and Decem-

ber, as has been previously explained in the record, as a test period in which to determine the excess cost per ton mile and per passenger mile of intrastate over interstate business. That is all we have used that test period for. It was intended to supplant the expert opinion, or the judgment, of railroad men, that intrastate cost so much more than interstate, as a matter of conjecture, or as a matter of experience, if you will, but we used this test period solely for that purpose to determine the percentage of extra cost of intrastate over interstate traffic, and we have carried those percentages back through all of these other exhibits, applied them to the ton miles and passenger miles in dividing the cost in the other years all the way back to 1907.

Exhibit No. 38, the one I have just offered, shows the train miles, ton miles and passenger miles per mile of road per day in Arkansas.

If you compare the test period of November and December, as shown in this exhibit with, for instance, the four months ended December 31, 1907—that is, November and December —you will note that four freight trains per mile of line per day hauled 1,280 tons, net, per mile of road per day, of revenue freight. That is an average of a little over 320 tons per train mile as against an average of the 230 tons per train mile in the four months ended December 31, 1907.

It will also be noted from the exhibit that operating exactly the same number of passenger trains per mile of road per day, that is, four, both in November and December, 1913, and in the four months of 1907, we hauled an increase of 74 passenger per mile of road per day in November and December, 1913, as compared with the four months of 1907.

Both of these comparisons, freight and passenger, indicate in a large way a cheaper cost per unit of traffic handled in the test period in November and December than obtained in the four months of 1907. Of course, that applies to all traffic, and there the intrastate and interstate are mingled in these tons and passengers on these trains that I have referred to, and it may be suggested here that we have offered nothing which will show the same relative cost be-

tween intrastate and interstate per ton mile and per passenger mile in these two periods.

If we turn to Exhibit No. 39, the chart that shows the average length of haul, we will see it shows the average haul of one ton, the average journey of a passenger, both state and interstate, for all of these periods. It will be noted that in the last half of 1913, the calendar year which included our two months' test period, the average haul of intrastate freight was 25.75 miles, and that this same average haul of intrastate, or within 3/10 of a mile, occurred back in 1907, where the average haul was 25.44 miles —that is, the four months of 1907 that we are concerned with. But the average haul of interstate freight has dropped down in the six months of 1913, which include our test period, from 82 miles to 76 miles. There is a decrease of six miles. It seems to me that that indicates plainly that considering the greater trainload and the resultant cheapened unit cost of all freight traffic, that the cost of all intrastate traffic per ton mile was less, as contrasted with the interstate traffic per ton mile, in the 1913 test period, than it was back in 1907. Therefore, so far as the freight traffic is concerned, the excess cost percentage of intrastate over interstate carried back from 1913 to 1907, has been too small. There is no question in my mind but that intrastate freight hauled an average of 25 miles carries a greater excess cost per ton mile over interstate freight hauled 76 miles, than does intrastate freight hauled 25 miles over interstate freight hauled 82 miles, and, as I previously stated, the intrastate haul of freight was the same in the test period as in 1907, but the interstate haul was six miles shorter in the test period than in 1907.

The burden of extra cost attaching to shorter hauls is the direct result of having a lesser mileage to spread the two terminals over. That is the point I had in mind there. Summed up, the whole function of the railroad's transportation culminates in the haul of traffic. That, to my mind, typifies more than anything else the nature of the cost of the service, and where the haul is shorter the unit cost is necessarily greater.

We have here a distorted relation. Our test pe-

riod shows that if we have an excess cost of intrastate over interstate which we have carried back into these other periods, if anything, it has been too small, at least as contrasted with 1907, and that is all that we have carried back from the test period, that percentage of excess cost.

As to the passenger traffic in this exhibit, virtually the same conditions as to length of haul appear in the two periods as in the freight service, and the same remarks would apply as to the percentage of excess cost.

On the other hand, if you consider the intrastate traffic by itself, the fluctuation and average length of haul, which is shown plainly in the chart in the exhibit—and that stands out prominently, that the average length of haul of intrastate passenger traffic in the last half of 1913, which included our test period, is the longest of any of the periods for which figures have been submitted, and for that reason we had the cheapest cost per unit of traffic, intrastate passenger, during that period." (451, 452, 453)

Exhibit 40 shows, in the form of a chart, the ratio of intrastate and interstate to the total freight and passenger traffic in the State. The effect of this exhibit can be best stated in the language of the witness:

"This exhibit shows that the intrastate passengers one mile were a larger proportion of the total passenger traffic in Arkansas in the months of November and December, 1913, and also in the four months ended December 31, 1907, than in any of the full fiscal years shown on the exhibit. To one familiar with conditions in Arkansas, the reason for this is plain. The fall period of the year is undoubtedly the heaviest period of passenger travel in this state. This is proven by the fact that the total passenger miles, intrastate and interstate together, in Arkansas, for the four months ended December 31, 1907, amounted to 14,207,000 passenger miles. Multiplying that four months' figure by three to get the year's figure, you get 42,621,000 passenger miles, whereas the actual passenger travel in Arkansas during that fiscal year was only 40,800,000 passenger miles.

Mr. Hill (to the witness): You haven't that on this exhibit?

A. No, sir; it is stated in Exhibit No. 27, those figures for the four months. This shows that multiplying the travel in Arkansas for the four months by three, you get considerably more than the total actual travel for a year, and that will seem to prove conclusively that the fall is the heaviest period of travel in this state.

The total passenger travel in Arkansas in the two months, November and December, was 9,895,000. You multiply that by six to get a year's figure, and the result is 59,300,000 passenger miles, whereas the actual passenger miles for the year in which these two months were included was but 52,400,000 miles.

It is further evidence that the fall and early winter months are the heaviest period of the year for intrastate travel along the same lines as indicated there, and, in fact, the chart shows it, but following the same line of thought as for the total travel it may be said that the actual intrastate passenger miles in Arkansas in the four months ended December 31, 1907, were 6,200,000 miles, in round figures. If you multiply that four months' figure by three you get a year's figure of 18,650,000. As a matter of fact, the actual Arkansas intrastate travel in that year was but 17,600,000, and relatively the same condition obtains in the two months' period of 1913, when you multiply by six to get a year's figure. It yields 24,000,000 intrastate passengers in Arkansas while the actual travel for the year was less than 22,000,000.

That would seem to explain why the percentage of intrastate travel to the total travel in Arkansas was greater in these fall periods than it was for the whole year. It is probably true that the crops in Arkansas have been marketed by that time, that is, the greatest single staple crop of the state, and that the people are financially better able to travel at that time than they are at any other period of the year; at least, the amount of travel would seem to indicate that.

The difference between the percentage of intrastate passenger miles to the total in the test period of November and December, and in the four months

ended December 31, 1907, is only 3 per cent., so that one would seem to be fairly reflective of the other. So far as this feature of the normality is concerned, I think that is a conservative statement.

Further, the test period of November and December used to determine the extra cost percentage of intrastate passenger travel over interstate may fairly be stated to have been a period which would show the minimum extra cost of intrastate travel for the reason that the entire cost of all passenger traffic, intrastate and interstate, was but 1.56 cents per passenger mile in these two months. That figure is deducible from the figure which gives the expense and the passenger miles for the test period in the exhibit." (454-455)

Exhibit 41 is also a graphic chart. It shows that in the last four months of 1907, 11.80 per cent. of the expenses of the entire railroad were assigned to Arkansas, and that during the same period there was moved in the state 11.28 per cent. of the total revenue ton miles of freight transported on the entire line; that during the same period the Arkansas proportion of the total passenger traffic of the entire railroad was 10.25. These traffic figures are expressed in ton miles and passenger miles. During the test period (November and December, 1913), the chart shows there was assigned to Arkansas 10.44 per cent. of the total operating expenses, or 1.36 per cent. less than the percentage shown in the last four months of 1907. At the same time it will be observed that the proportion which the freight traffic of Arkansas was to the freight traffic of the entire line was 1.8 per cent. less in the 1913 period than in the 1907 period, while the Arkansas proportion of the passenger traffic of the entire line was one per cent. more in 1913 than in the 1907 period.

Referring to these comparisons, Mr. Hamilton testified that:

"The variations in these percentages are small,

but it will be noted that the proportions of revenue traffic moving in Arkansas run fairly well hand in hand with the assignment of expenses to Arkansas. This, of course, covers all business, freight and passenger, intrastate and interstate, the object being to endeavor to show that the assignment of expenses to Arkansas has been fair, considering the proportion of traffic in Arkansas.

It will be noted, too, that so far as these fluctuations go, that where the proportion of freight traffic is smaller, the proportion of the passenger traffic is greater, that the proportions of expense assigned to the state run about level." (456)

Exhibit No. 52 contains a table comparing the maintenance of way and structure expenditures per mile of line in the State of Arkansas in the several periods covered by the exhibits with similar averages for the entire line of road, from which it will be seen that these expenditures run about level during all the periods, the expenditures for the two months in 1913 (November and December) being almost exactly one-half of what they were for the four months in 1907. In all the periods except the months of November and December, 1913, the charge in Arkansas per mile of line is a little in excess of the average for the entire railroad, which is accounted for by the table on page 1 of the exhibit, showing a material excess in bridges and trestles in that state, in the maintenance of which a larger expense would necessarily be incurred. In connection with this subject we call attention to the testimony of Mr. Hamilton at page 538 of the record.

We have dwelt at some length on this point because it is important that every material fact in connection with it should be brought to the attention of the court. The evidence we have recited is wholly uncontradicted. The defendants did not attempt to controvert it or produce any evidence on that point. The exhibits referred to establish beyond question the similarity of operating

conditions enumerated by Mr. Nay as proper tests for the purpose of determining whether the period in which the investigation or test was made was representative of other periods to which it was sought to apply the results.

The investigations in this case have been conducted in very much the same way that a manufacturer desiring to know the cost of producing the articles he manufactures would proceed. He arranges a cost accounting system concerning the facts of each operation or process, the time devoted to it and the labor expended upon it, on the spot where the manufacturing is conducted. This method is fundamentally sound because it studies the factors which reflect the use of the manufacturing plant in the production of its output, and gathers knowledge at the source. The Railroad Company in this case may be likened to a manufacturing business; it manufactures and sells transportation, and in the investigations made by it for the purpose of determining the cost of producing intrastate freight and passenger transportation, it proceeded in the same manner as such problems are treated in commercial manufacturing enterprises. It gathered the data essential to a complete knowledge of the facts controlling the cost of producing transportation of various classes on the trains, in the yards and at the stations where the traffic is handled. Having ascertained the facts at first hand concurrently with the daily operation of the plant, or railroad, there only remained the matter of making a correct application to the cost problem of the information so gathered. That this has been accurately done is not controverted by the defendants. A railroad can not, like an ordinary manufacturer, carry on an investigation of this kind beyond a limited time, as the expense of conducting such a test on a large railroad continuously would be prohibitive,

and for that reason, in making cost studies railroad officials necessarily have to confine themselves to a study of the factors influencing cost conditions, and the results, for comparatively short periods, which should be, and are, in this case, reflective of the ordinary normal operating conditions on the railroad. We submit, in conclusion, that the methods pursued in the investigations developed in this case are analogous to those employed in manufacturing plants, that the work was conducted with great care, and the results are as nearly correct, and as closely reflect the cost of the intrastate freight and passenger business, as it is practicable to make it.

It is proper at this point to say that all the records of the Railroad Company, including the calculations and detailed working data prepared in connection with the test, as well as the regular records, were submitted to and checked by the defendants' accountants, extending over a period of several months, and that no errors of any magnitude, or having any noticeable effect on the results, were developed by them.

The learned counsel for the defendants discusses this question from the standpoint of normality of the four months in 1907, rather than the test period in the last two months of 1913, assuming, as we understand the argument in his brief, that the value of the test must be determined by the normality of the former rather than the latter period. They also take it for granted that the plaintiff predicates its case wholly on the evidence as to the inadequacy of the earnings of the last four months in 1907. Counsel totally misapprehend our position; the purpose and effect of the exhibits filed, and the evidence introduced by plaintiff as to the effect of the enjoined rates, was to cover all the fiscal years from 1910 to 1913 and the four months in 1907. It was obviously necessary when plaintiff made its application for

temporary injunction at the commencement of the proceeding that it should select a prior period in which to make its preliminary proofs. For that reason the four months in 1907 were selected, because they were regarded as the first representative period after the rates complained of had been put in force. Plaintiff felt, however, that it would not be proper, or meet the requirements of the case, to confine the evidence, as to the effect of the inhibited rates, to that period after so long lapse of time had occurred before the hearing, and covered the entire period in which the records of the company were available, from the institution of the suit to the end of the fiscal year preceding the test. Exhibits 22, 24-26 cover all these periods, Exhibit 27-A covering the period in 1907. Evidence was introduced by plaintiff showing that the actual movement of business in the period in which the test was made was reflective of the traffic conditions that existed in the preceding periods, and for that purpose evidence was introduced showing in what respects there should be similarity of conditions in the different periods. These conditions having been established by the uncontradicted evidence, the exhibits taken from the records of the company, which are admitted to be correct, were filed and are fully explained, and the effect thereof pointed out in the evidence of Mr. Hamilton which we have quoted, and which we submit establishes such similarity in the movement of traffic, and in general operations affecting traffic, such as the empty car movement, the length of haul, the road mileage, the train miles per mile of road per day, and other conditions pointed out, as to leave no room for doubt, or reasonable question, as to the normality of the test period as compared with the preceding periods covered by the exhibits; and no reason has been shown why the traffic of the railroad should not have

run evenly and have been characterized by the same general conditions, throughout the five years covered by the exhibits and evidence. The condition of the country, and of business generally during that period, save for a short depression which began in the latter part of 1907 and ran through the year 1908, which is not covered by the exhibits was normal. There was nothing to disturb the even balance of trade or to create any unusual or abnormal fluctuations in the movement of traffic throughout the country. It would be strange if under these circumstances there had not been such similarity of conditions in traffic as is developed by the statistics and the evidence produced in this case.

In this connection counsel quote the following language in the Minnesota Rate Case (230 U. S., 559):

> "The wide variation in results obtained on the different hypotheses, each of which is earnestly supported in argument, illustrates the necessity for the keeping of suitable accounts, at least during typical periods, which will furnish correct statistical information bearing upon the cost of intrastate transportation as compared with interstate, instead of leaving a matter of such intricacy to general expressions of judgment."

The court, in the language used, was referring to the effort in that case to establish the cost relation of intrastate and interstate transportation by opinion evidence, instead of gathering suitable facts by tests made during typical periods for the purpose of establishing the difference in cost on the basis of facts, rather than conjecture. The record in this case shows that in selecting a typical test period, and in making tests from actual daily operating conditions, and in justifying the representative character of the period, and the results of the test by actual evidence based on ascertained facts and statistics taken from the record of the railroad company,

the plaintiff has tried to follow the suggestion contained in the quotation, and has collected such detailed facts and information bearing on these questions as has never before been presented in the record of any case of this character.

Judge Hill in his brief in the first Arkansas case, states he examined the original record in *Smyth* v. *Ames*, 169 U. S., 466, and found the test period in that case to have been two months. The opinion of this court in that case discloses that the test period results were applied to several prior years.

The statement of Judge Hook in his opinion in the case of *M. K. & T. Ry. Co.* v. *Love et al.*, 177 Fed., 493, presents a reasonable and fair rule, and we quote the same as follows:

> "Of necessity, it must proceed upon average conditions commonly known or shown to exist, and it argues nothing to say that it does not fully apply to this or that exceptional instance. A general rule based on experienced observation is fair, and what is lost by its application in one place is doubtless gained in another, and an equitable equilibrium maintained."

The trial court found the test period to be a normal one for test purposes, his final conclusions being stated in the following language (p. 916-7; 222 Fed., 548):

> "It is also shown by the evidence, and the court so finds, that the months of November and December, 1913, were normal months for that road in the State of Arkansas, as reflective of the year's business. By this it is not meant that the earnings and expenses of these months were exactly one-sixth of the entire year, but that the relation between the different articles of traffic and expenses based on the traffic are substantially the same for the entire year, and this was verified, it is shown by the witness Hamilton, by comparing them with the last four months of 1907. It was shown also that although the traffic during these four months constituted a

little over 36 per cent. of the entire year's business, the expense, as well as the use, were reflective of the entire year."

APPLICATION OF TEST PERIOD EXCESS COST RELATIONS TO PRIOR YEARS.

The excess cost of state over interstate freight per ton mile and the excess cost of state over interstate passengers per passenger mile as found in the 1913 test period was applied by the plaintiff to the corresponding units in the prior periods in the division of the respective freight and passenger expenses of such years between state and interstate. (Exhibits 24, 25, 26 and 27a.) That this application has, if anything, undercharged the state business is conclusively shown in the relations of the length of state haul to the interstate haul in the various prior periods, where, in case of both the freight and passenger, the length of the state and interstate hauls are wider apart than in the 1913 test period. (Exhibit 39.) This condition results in a greater excess cost of state over interstate in those periods than was applied and was found in the test period where the average length of haul of state and interstate traffic was more closely together.

As the excess cost of state over interstate traffic is due largely to the difference in the length of haul of these respective classes of traffic (442-3) it follows that as the length of the state haul decreases or the length of the interstate haul increases the ratio of state terminal handlings to interstate terminal handlings per ton mile or per passenger mile increases somewhat correspondingly which, in turn, results in additional excess cost of state over interstate. To illustrate, Exhibit 39 filed in this case, shows that in the freight service the average state haul was, in the 1913 period, 25.75 miles, and in the

four months of 1907, 25.44 miles, while the interstate haul was, in the 1913 period, 76 miles, and in 1907, 82 miles; thus in the 1913 period the relation of state to interstate haul was 33.88 per cent., while in 1907 it was only 31.03 per cent., or about 8 per cent. less, which automatically results in a correspondingly greater use of terminals and a greater excess cost of state over interstate than was found in the 1913 test, and as a result of applying the 1913 test cost relations in the division of 1907 expenses the state business was undercharged to the extent of using an excess cost factor which was 8 per cent. below the actual.

On the passenger side the average haul of state traffic was, in the 1913 period, 19.06 miles, and in 1907, 18.84 miles, while the interstate haul was, in the 1913 period, 39.89 miles, and in 1907, 42.59 miles; thus in the 1913 test period the state haul was 47.78 per cent. of the interstate haul, while in 1907 it was only 44.24 per cent. of the interstate haul, or about 8 per cent. less than in 1913, which results in a relative increased percentage of use of the terminals by the state traffic and a somewhat corresponding increased excess cost in 1907. Therefore, the application of the 1913 excess cost relation in a division of the 1907 expenses has resulted in undercharging the state passenger business in that period to the extent of using an increased cost factor which was about 8 per cent. less than the actual.

As showing that the relative state and interstate hauls are wider apart in all of the prior periods than they were in the test period and, therefore, no violence was done in applying the test period cost relations to the prior periods, the following information shown in Exhibit 39 is reproduced with the percentage ratios shown thereon:

FREIGHT.

	Length of Haul		Percentage of State to Interstate
	State	Interstate	
Test Period	25.75	76.20	33.8
Year 1913	25.55	80.42	31.8
" 1912	27.97	85.58	32.7
" 1911	23.74	79.46	29.9
" 1910	21.26	77.19	27.6
4 mo 1907	25.44	81.97	31.0

PASSENGER.

	Length of Haul		Percentage of State to Interstate
	State	Interstate	
Test Period	19.06	39.89	47.8
Year 1913	16.31	47.67	34.2
" 1912	16.42	46.36	35.4
" 1911	17.90	47.22	37.9
" 1910	16.52	42.51	38.9
4 mo 1907	18.84	42.59	44.2

METHOD OF APPORTIONMENT OF REVENUE TO ARKANSAS AND TO FREIGHT AND PASSENGER, INTRASTATE AND INTERSTATE, AND MAIL AND EXPRESS TRAFFIC.

EXHIBIT No. 4.

In this exhibit there is stated in detail the method of allocation to Arkansas of intrastate freight and passenger revenues, and the apportionment to Arkansas of interstate freight and passenger and mail and express revenues.

This exhibit is, for the convenience of the court, printed as appendix No. 1, and appears at pages 283 to 298.

TAXES, RENTALS AND HIRE OF EQUIPMENT.

EXHIBIT No. 5.

Exhibit 5 describes the method of assignment to the state, and apportionment between the different classes of traffic within the state, of taxes, rentals and hire of equipment.

TAXES—The apportionment of state, county and municipal taxes between freight and passenger, intrastate, interstate, mail and express follows the division of the valuation of the property prescribed in the formula at pages 38, 38-A, 39 and 39-A as applied on page 8 of Exhibit No. 18. The Federal income tax was assigned to Arkansas in Exhibit No. 19 on the basis of the relation of the net earnings in the state to similar net earnings of the entire system in all the states. The proportion assigned to Arkansas was divided between freight and passenger, intrastate, interstate, mail and express on the basis of the net earnings of each class as shown in Exhibit No. 22. These assignments of state and Federal taxes are also contained in Exhibit No. 19. It is hardly necessary to state that property taxes follow the value of the property, and the income tax the earnings, because of the direct relation of property taxes to property values, and of income taxes to net earnings.

RENTALS AND HIRE OF EQUIPMENT—The manner of apportioning these items is explained fully in Exhibit 5, beginning on page 1 and continuing to page 4. Inasmuch as there was no controversy over these assignments, it is not necessary to deal with them in detail. It is sufficient to say that the division was made wherever possible on the basis of the actual use made of the rented property or facility, and, in regard to hire of equipment, that an analysis of the charges and credits to that account was made up from original vouchers, and the records underlying such bills and vouchers, for the purpose of segregating the charges and credits as between locomotives, passenger cars and other equipment. After the net amount of debit or credit was ascertained for each class of equipment, an assignment to the state was made on the basis of the mileage made by the respective classes of equipment in the state as compared with the mileage of the same class upon the entire road.

Much of this item is assigned automatically as between freight and passenger service by reference to the class of the equipment.

This exhibit is, for the convenience of the court, printed as appendix No. 2, and appears at pages 299 to 305 hereof.

SUNDRY TRANSPORTATION STATISTICS COMPILED FROM EXHIBITS 2, 2-A TO 2-K AND 3, INCLUSIVE, AND REDUCED TO A PERCENTAGE BASIS FOR USE AS FACTORS IN SUBSEQUENT APPORTIONMENTS.

EXHIBIT No. 6.

Exhibit No. 6 contains a table of sundry transportation and other statistics compiled and reduced to a percentage relation for use in making various apportionments. Thus, it includes engine ton miles in the freight and passenger service; revenue passenger miles in coaches and Pullman cars, with the state and interstate passenger miles for each; passenger handlings, both intrastate and interstate; train miles in the freight and passenger service; locomotive miles in the freight and passenger service; car miles in the freight and passenger service; passenger train car-foot miles, apportioned as between passenger carrying and auxiliary space, including baggage and dining cars; a division of yard service time in hours; of road service time in hours. Also the number of consignments of freight, state and interstate; loaded cars received and forwarded, state and interstate; net tons of revenue freight, carload and less than carload, state and interstate; net tons of company material and gross tons of revenue freight received and forwarded, carload and less than carload, state and interstate; gross ton miles of mixed trains, and net ton miles of revenue

freight, state and interstate, and revenue passenger miles, state and interstate; and the trains, freight and passenger, crossing bridges.

Operating Expenses for Test Period of Entire Line, and As Assigned to State of Arkansas.

Exhibit No. 7.

This exhibit contains a statement of the amount of each class of expense incurred on the entire railroad during the test period, and the amount thereof assigned to Arkansas, under the formula. The mileage of the system and of the state, respectively, is shown on the exhibit, and it appears that about 12½ per cent. of the mileage of the system is in Arkansas and 10½ per cent. of the total expenses during the test period was charged to that state.

Division of Operating Expenses Between Line and Terminal.

Exhibit No. 8.

Exhibit 8 divides the expense assigned to the state, and carried over from Exhibit 7, between line and terminal service. In the first column, opposite each item or account, there is a reference to the page of the formula (Exhibit 1) under which the division was made.

Division of Oerating Expenses, Line and Terminal, Between Freight and Passenger.

Exhibit No. 9.

Exhibit 9 contains a division of the line and terminal expenses in the state, following the division made in, and brought forward from Exhibit 8, between freight and

passenger service. This exhibit contains a similar reference to the pages of the formula under which the divisions were made, and the two exhibit (8 and 9) are based on the special investigation made and the records kept by agents, trainmen and yardmen as shown and described in Exhibits 2 and 2-A to 2-K, and the evidence introduced as to the proper division of locomotive and car repairs between line and terminal, to which we will hereafter refer.

The following evidence of the witness, T. A. Hamilton, as to the manner in which the information was obtained and the data collected, from which the division of the maintenance-of-way expenses between the line and terminal and freight and passenger service was made in the test period, will illustrate the method pursued with reference to all other divisions, and the means employed to obtain detailed and accurate information in regard to the extent to which the property and facilities, in the maintenance and operation of which the expense was incurred, were used in the various branches or classes of service to which it was devoted.

Mr. Hamilton testified:

> "It is first necessary to determine the proportion of maintenance-of-way expense which was chargeable to line service and to terminal service, that is, the portions of expense incurred in keeping up track and structures and appurtenances which were used by the line service, and which were used by the terminal service. To do that we had to get very close to the ground. In the months of November and December, 1913, we had our section foremen keep an actual account of the entire labor and material expenditures. It was done in this way: We went out on the line, sat down with each section foreman, took his time and material books (of which he renders one each month to the superintendent, who in turn reports to the auditor) and classified each track over which each individual section foreman

had charge according to its use as a line track or a terminal track, or common to line and terminal. If it was used exclusively for freight terminal service, we marked it as a freight terminal track. If it was used exclusively for line service, we marked it as a line track, and all our straight line tracks are common to freight and passenger. We had him then enter on each track section (five or six miles) each day, a division of his labor and that of the men employed under him, and material used as between these classes of tracks. His time and material books were fitted to the tracks which he had in his charge. In other words, we made a hole for him to put his figures into and numbered the tracks. If he worked on track 1 he charged track 1. We classified track 1 when we got his book, as a line track, or terminal, or freight, or passenger. We accumulated in that way the actual maintenance-of-way expenses for these two months. It is subdivided between freight and passenger tracks and line and terminal tracks. That also extends to the buildings, crossings and other matters that the section foreman keeps up.

As to the bridges, buildings, and similar structures, we maintain regularly what we call structure reports, in which the charges for repairs or maintenance of each building, each individual building, or each individual bridge structure, are kept separately. That is a part of our regular accounting scheme. We had, then, without extra effort the cost of repairs of individual buildings, bridges and trestles. It only remained to classify those according to their use as between line, terminal and freight and passenger. That was the basis of our line and terminal, freight and passenger division, of maintenance of way expenses." (107-8)

The same care that was exercised for the purpose of obtaining exact and detailed information upon which to base a division of maintenance of way expenses was exercised in every other branch and department of the service, as will be seen by reference to the description of the methods employed, contained in Exhibit No. 2, and

the forms upon which reports were required to be made by station agents, yard foremen, conductors and trainmen, including extra men placed on trains for the purpose of obtaining and reporting the information required in making the divisions between all other classes of service, with the instructions printed on the back of, or in connection with the forms, and the system of instruction imparted to the agents and employes who were charged with the duty of keeping record of the facts. When it was decided in the Minnesota Rate cases that the old bases of division of expenses, such as revenue, ton miles, etc. were not, alone, proper factors for that purpose, and that a basis must be found in the use made of the property, which would correspond to the extent of its employment in the business, it became necessary to find a means by which such an assignment could be made, and the expense of operation apportioned among the different branches of the service involved in transportation, ascertained and established by tests made in the actual use and operation of the property, and a ratio of cost established between the various lines of traffic based on actualities, or facts, rather than on opinion and expert testimony of railroad officials. The methods prescribed in the formula, and applied in the exhibits in this case, were devised by intelligent and capable men, whose experience fitted them for the task, whose purpose it was to devise a plan in conformity to the views expressed by the court, and whose combined judgment, we submit, is entitled to great weight and respect, as is supported by convincing evidence.

Non-Revenue Service Adjustment.

Exhibits 10 and 11.

Company property, material and employees, are necessarily moved from station to station on freight and passenger trains in the conduct of the transportation business. The cost of this service is a necessary charge on the revenue freight and passenger service, and it should be, and has been, assigned in such manner as to distribute the non-revenue service burden in proportion to the benefits accruing therefrom to each class of service.

The cost of line and terminal service respectively performed in the transportation of company or non-revenue freight and passengers is distributed over the revenue service in proportion to the direct cost of the different classes of service in the manner prescribed in the formula, Exhibit No. 1, page 37.

The manner in which this is done is set forth in Exhibits 10 and 11. The first of these exhibits explains the method of apportioning the cost of such non-revenue service between the freight and passenger and line and terminal service. In Exhibit No. 11 is shown the application of the adjustment of the cost of transporting such company material and non-revenue passengers between the freight and passenger revenue service, and between that part of the passenger train service devoted to the hauling of passengers, baggage, etc., and that part devoted to the hauling of mail and express. In addition to the explanation contained in Exhibits 10 and 11, the matter is fully explained by Mr. Hamilton (83-4) and Mr. Nay. (296-8)

There is no challenge of the necessity for such an adjustment, or of the manner in which the same was made. Such an adjustment is required between the freight and passenger service by the order of the Interstate Com-

merce Commission effective July 1, 1915, governing the separation of operating expenses between freight service and passenger service.

APPORTIONMENT OF PASSENGER TRAIN EXPENSES BETWEEN PASSENGER CARRYING AND MAIL AND EXPRESS SERVICE.

EXHIBIT No. 12.

This exhibit contains a division of passenger, "line and terminal," expense between the passenger-carrying service and mail and express traffic on the basis prescribed by the formula at pages 25, 26, 27, 31, 32 and 33. Some explanation has been given of the method of division here used in the text of Exhibit No. 3. In further explanation of the subject we quote the following evidence of T. A. Hamilton:

> "Exhibit No. 12 shows, the division of passenger expenses, both line and terminal, between straight passenger traffic, and mail and express, or, rather, it shows the results of that division. That has been made, in the case of line service, on what is termed the 'car-foot mile' basis. For the months of November and December, 1913, the actual consist of cars in every passenger train moving within the State of Arkansas was analyzed, and the number of lineal feet in each train assigned to the mail and express service, and assigned to all other passenger train service, were determined, the measurement of the space assigned in each car to each class of service being multiplied by the number of miles that that car ran in Arkansas. Those car-foot mile percentages have been used to divide between passenger service and the mail and express service, or, perhaps, I should have said the passenger carrying service and the mail and express service, the passenger expenses. The results of that division are shown in this Exhibit No. 12, which is herewith introduced.
>
> As explained in Exhibit No. 4, mail and express earnings have been assigned to Arkansas. Now, in

Exhibit No. 12, following the various preceding steps, we have set aside the mail and express expenses." (84)

Mr. Nay testified:

"Q. In making the division between freight and passenger you spoke of a moment ago, what did you do with 'mail and express?'

A. When we got the passenger proportion separated, we then set aside from the passenger expenses a car-foot mile proportion, as representing the expense applicable to mail and express.

Q. Why did you adopt the car-foot mile as a unit for making that division?

A. In my mind, there were two reasons: The first is, that it is about the only common factor between mail, express and the other portions of the passenger service. And then the United States Postoffice Department had adopted the basis in an investigation they made some years ago to determine the cost of carrying the mail on trains. They went into the matter very thoroughly at that time, and the railroad companies all prepared data showing the car-foot mile proportion. And my information is that that basis was pretty generally accepted, both by the United States Postoffice Department and by the majority of the railroads, as being fair.

Q. Is there any unit that so nearly represents the use derived from those classes of traffic, mail and express, of the facilities furnished by the Railroad Company for transportation, as the car-foot mile?

A. I know of no other unit." (295, 296)

APPORTIONMENT OF LINE PASSENGER EXPENSES BETWEEN COACH SERVICE, PULLMAN SERVICE AND OTHER PASSENGER TRAIN SERVICE AND BETWEEN INTRASTATE AND INTERSTATE TRAFFIC.

EXHIBIT No. 13.

This exhibit contains a division of line passenger expenses, as set forth in Exhibit No. 12 (after exclusion of

mail and express), between coach service, Pullman service and other passenger train cars, and between intrastate and interstate traffic on the basis prescribed in the formula at pages 25, 26 and 27. The principle upon which this division was made and the method of ascertaining and applying the car-foot miles, and the ultimate assignment of the expense incident to the various classes of cars used in passenger trains to intrastate and interstate expense have been referred to, but the following testimony of Mr. Hamilton states the matter so clearly that we here insert it:

> "In Exhibit No. 13, the passenger expenses, line passenger expenses, haulage passenger expenses, from which the mail and express car-foot mile proportion has been eliminated, are divided, first, between coaches, Pullman and other cars in the passenger trains, mail and express space excluded. That division also has been made on the basis of the car-foot miles, the lineal foot space assigned to coaches and in Pullman cars, and in the auxiliary cars, the baggage cars, the dining cars the observation cars and parlor cars, the proportions of which having been determined were multiplied by the miles each car ran, according to its use by passengers, or its provision for use by passengers. These car-foot miles have been used to divide expenses of line passenger service, mail and express excluded, between coach service, Pullman service and the auxiliary car service in passenger trains.
>
> Q. Auxiliary car service includes what?
>
> A. Baggage cars, dining cars and observation cars.
>
> I want to call attention to one item in Exhibit No. 13; the first column of the exhibit after the reference to the pages of the formula shows the total line passenger expense. Under the head of 'Maintenance of Equipment'—maintenance of locomotives—that total line passenger expense is divided between coaches, Pullman cars and other cars. The per cents. representing the car-foot mile proportions are shown at the head of the column, but in

the case of passenger train cars it will be noted that no allotment is made of that expense to Pullman cars, repair expenses of passenger train cars being divided between coaches and other auxiliary cars in trains, excluding the Pullman. That is for the reason that the company does not make any repairs of Pullman cars, except, however, accident repairs, and there are none of that character within this particular period.

The Court: Q. You mean under its contract the Pullman Company does its own repairing?

A. Yes. As a matter of fact, we may actually do the work, but we render a bill for our reimbursement. They stand the cost, they bear the cost. If we demolish a car in an accident we replace it, unless that accident be due to a defect in the car itself.

This exhibit shows for each division the percentages and bases on which it was made. After dividing the expenses between the coaches, Pullman cars and the auxiliary cars, the coach expenses, taken separately, are divided between intrastate and interstate on the basis of the passengers one mile who rode in coaches. That is an actual statement of the passenger travel in coaches for the two months.

It might, perhaps, be well to digress there and explain how the coach passenger miles and Pullman passenger miles are obtained separately.

The Court: Q. You charge up the expenses of each mile regardless of the number of passengers, and disregard the space of coach—

A. We first made the division between coaches and Pullmans and auxiliary cars. * * *" (84-5)

This is the identical basis of apportionment employed and approved by the state in the Iron Mountain-Arkansas case.

APPORTIONMENT OF LINE FREIGHT EXPENSES BETWEEN LOCAL AND THROUGH TRAINS AND STATE AND INTERSTATE TRAFFIC.

EXHIBIT No. 14.

The total line freight expense for the test period, having been ascertained in Exhibit No. 9 and charged with its proportion of the expense of the nonrevenue service in Exhibit No. 11, is apportioned in this exhibit between local and through trains (the freight proportion of mixed trains being included in local trains) and the expense of each class of trains is then divided between intrastate and interstate traffic in proportion to the net ton miles of each class transported in said trains, respectively.

It is a well known fact, accepted on all hands, that in the operation of American railroads, local freight trains are more costly to operate per train mile for transportation expenses than through freight trains. The local freight train is manned by a crew numerically larger than that of the through freight train, performs substantially all of the station work of loading and unloading freight, picking up and setting out cars at intermediate stations between district terminals; is a longer time upon the road in accomplishing a given mileage than the through freight train, all of which adds materially to the cost of operation per train mile. Further, the local freight train carries less tons of freight per train mile than the through freight train, which operates to make the cost of transporting a ton one mile on the local freight train greater than the cost of transporting a ton one mile on the through freight train. The evidence in this case has shown that the proportions of intrastate and interstate freight carried upon the local trains are different from the proportion of

those two classes of freight carried upon the through trains. It has, therefore, been considered proper in arriving at the cost of intrastate and interstate freight business respectively, to segregate first the cost of operating the through and local freight trains and then to subdivide such cost between intrastate and interstate traffic in proportion to the volume (ton miles) of intrastate and interstate freight carried upon each class of train considered separately.

This exhibit contains the result of the methods adopted under Exhibit No. 1 for separating and determining the expense of operating local and through freight trains, and the ascertainment of the amount of intrastate and interstate freight traffic carried on each class of trains. Under the methods heretofore used these divisions could not, or at least were not, ascertained with any degree of certainty, but rested largely on estimates made by operating officials. An effort was made in the Arkansas Rate cases (230 U. S., 553) to arrive at a proper division of expenses between local and through trains, and to determine the intrastate and interstate contents of each class of train, referring to which the court, after saying that the ultimate conclusion as to the returns from the business must depend upon the certainty of the proof with respect to the segregation of the results of intrastate operations, found that while the figures and calculations in the cases represented a serious effort to effect a reasonable apportionment, there was not enough data upon which to compute the extra cost of intrastate transportation with sufficient certainty. The court said at page 559:

> "The controlling factors, used in the computations, represent general estimates of the conditions of transportation, which may or may not be accurate, and there was an absence of satisfactory evi-

> dence, to take the place of the rejected tests, giving with requisite particularity the actual movement of traffic at the times in question, and affording a proper basis for the determination of relative cost."

In this case an effort, and we confidently assert a successful one, has been made to cure the defects in the proof referred to by the court. The calculations upon which the divisions of expense contained in the exhibits in this case are made, are based on the information obtained in the manner provided in Exhibits 2, 2-A to 2-K and 3, in which the history of the movement and the contents of every through train, every local train and every mixed train is given in detail and with as complete accuracy as is attainable by the employees and officials engaged in operating the trains, with the assistance of men specially detailed to supervise and assist in the work and see that the records were properly kept, and the results of whose labors were compared and checked by the waybills and other records regularly kept by the company, by which the certainty of proof required in the segregation of the results referred to by the court was obtained as nearly, we submit, as is practicable through human agency, not only with reference to the movements of the trains and the cost thereof, but also as to the amounts of intrastate and interstate traffic that move on them. On this subject we call attention to the testimony of Mr. Hamilton and Mr. Nay.

Mr. Hamilton testified:

> "In Exhibit No. 14 is taken up the division of line freight expenses between the intrastate and interstate traffic. It is first necessary to divide the expense between the local and the through train, the freight proportion of the mixed train being combined with the locals, because that is nothing but a

local train with a coach on the end of it. The actual assignment—the actual allocation of expenses between local and through freight trains was made of such items as directly attach themselves to those respective classes of trains. Wages, for instance, of enginemen and trainmen were actually allocated, taken from the company's payrolls and time slips for these two months. The fuel for road locomotives was actually charged out to the local and through trains.

Mr. Moore: Q. That is for each train, on each run?

A. Yes; I was coming to that. It was not necessary to make any special test to charge out the fuel, as was done in the Cotton Belt case and applied on assumption to the Iron Mountain, for the Frisco for a number of years has conducted a fuel economy campaign, in doing which it keeps records of the coal issued, in tons, to every engine on every class of train, upon every trip. We didn't have to make any special test to get the fuel charges to local and through trains; we already had it. In fact, we keep a great many separate statistics as to local and through trains for our own regular daily information. This is one of them. There is no assumption in that figure and no bringing over of the test on another road; it is our own actual coal issues to these two classes of trains and against which the fuel agent balances out his stock of coal and accounts to the auditor for it. In the main, such expenses as could not be actually allocated to local and through trains were divided between them on the basis of the gross ton miles in each class of train. That is, the entire weight of the train from the pilot of the engine to the rear platform of the caboose, including the contents of all the cars and including the average loading of the engine's tank or tender with fuel and water. The theory of that was this: We have here the line expense, as previously determined, the haulage expense chargeable to freight service. The use made of the property in incurring that expense is reflected in the trains which moved over the property. The pro-

portionate use was reflected by the size of the train and the best index we could find of size was weight. We took the weight of the entire train from end to end, and its contents, even the contents of the engine in fuel and water. Some items were not divided on a gross ton mile basis. Some were actually located. Some depended on other divisions, as, for instance, the operation of fuel stations was divided on the basis of the charge-out of fuel. That is an actuality, in reality, because the coal is charged out at an average price for the entire railroad, and the money charged for fuel is in reality directly translatable into tonnage, and surely there could be no better division of the expense of operating the fuel stations than the number of tons of coal that are delivered at those stations to local and through trains. That is the division that has been made.

The water expense for freight road locomotives has followed the fuel division, for the reason that a pound of coal burned in the firebox of a local freight engine will evaporate just as much water as a pound of coal burned in the firebox of a through train engine. The water consumption directly follows the fuel.

Aside from that, and the actual allocation of wages and fuel, the expenses have been divided between the local and through trains on the basis of the gross ton mile, actual. How those gross ton miles were obtained is explained in Exhibit No. 2. Having, then, the local train expense and the through train expense, the division of the local train expense was made between intrastate and interstate business on the basis of the net ton mile contents of the cars carried on local trains. That was determined as the result of an actual test, as described in Exhibit No. 2.

The same is true of the through train. We did not get the figures for the local train and deduct them from some total which was already of record and say that the balance was the through train, as was done in the Iron Mountain case, of necessity, because the State did not have the through train performance and could not get it at that time, but we also actually analyzed the through trains just as

thoroughly as we did the locals, and there was no process of deduction here. This is an actual analysis. That covers the division of line freight expenses between state and interstate traffic through the medium of the division between local and through trains." (86, 87, 88)

Mr. Nay testified at page 315: "The Frisco, in this case, has carried the 'line' freight expenses through to a conclusion as between local and through trains, and then have divided the expenses so subdivided, between local and through trains on the basis of the net ton miles in the respective trains, as between state and interstate.

That is the underlying principle all the way through, just as they had one principle which went through the division of 'line passenger' expenses. There it was separated between sleeping cars, day coaches and other cars, mail and express. Here the separation is between local freight and through freight; and practically the same principle that was applied to the 'passenger' is here applied, except that in the passenger it was applied to different sections of the trains, and in this case it is applied to different classes of trains, the local and the through.

I think that gives the principles, Judge Moore, and I think they are right. I think they are such as will produce the right conclusions, and get away from the increased cost estimate we used to have." (316)

Division of Terminal Freight Expenses Between State and Interstate Traffic.

Exhibit No. 15.

In this exhibit a division is made of terminal freight expense between intrastate and interstate traffic. Like Exhibit No. 14, it is based on Exhibits 9 and 11—the parts of said exhibits which relate to terminal freight expense. The following extract from the testimony of T. A. Hamil-

ton will explain the basis of facts upon which the divisions are made:

"This division has not been made, as was done in the Iron Mountain case, where the Interstate Commerce Commission's grouping of station expenses was divided on the basis of the state tons multiplied by two, and the interstate tons charged with one terminal, and that in the lump, for the state. The station portion of this terminal expense has been divided on the basis of the actual tonnage handled in and out of each individual station during the two months. In the Iron Mountain case the yard expense (a portion of which is found in this terminal expense) was divided on the basis of cars handled. The division here has been upon the basis of cars received and forwarded, but not in total for the state. Each individual yard was treated separately, and the expense of that yard treated separately, so there was no over-burdening or mis-distribution by reason of lumping all of the yards in the state and all of the cars handled in the state. The local condition of each yard is reflected in this detail division.

But there is more in this terminal expense than what is ordinarily known as station and yard service. In former cases there has always been a great deal of controversy as to how much switching the local freight train did on its journey each day. That has been a matter of assumption and conjecture. Here, for two months, we found out actually how much time each local freight train in this state switched, each local freight train on the Frisco in this state. We know how much time it devoted to switching and loading and unloading freight at each station every time every train stopped. We know how long it stopped for other purposes, such as taking coal and water, meeting and passing trains, or getting orders. That latter class of time has been charged to line service, because it is necessary for the running of the train over the road, not for the station delivery or receipt of freight. We have segregated the actual performance of these local and through trains and found out how much time they devoted to this terminal service, and we have divided that expense on the basis of that time. Heretofore there has al-

ways been buried in the case of both the local train and through train this item of expense, or element of expense, which had nothing to do with the moving of that train over the road. These are not haulage costs, but are really terminal costs. In fact, the local freight train supplants the switch engine, when it stops and works at a station for an extended period, a greater or shorter length of time, and that really is a yard function, a terminal function. It simply does that as a matter of economy and expediency to avoid keeping a switch engine there. We have analyzed that time, and have charged the station service time, the terminal time, to terminal service. It has not been buried in the haulage cost and charged to each ton mile alike, but it has been located to that station and charged to the tons that were handled at that station, state or interstate. That explains one of the vital differences in the method heretofore followed and the method that has been followed in these exhibits. This terminal cost that we are analyzing has been built up in that way." (88, 89)

Mr. Nay also testified on this subject explaining from his viewpoint the propriety of this division, as follows:

"*Mr. Moore:* Q. Will you now go to the apportionment of terminal freight between interstate and intrastate? I think you will find that on page 34.

A. Here the basis throughout is to divide these terminal freight expenses on the basis of the tons, in some cases net and in some cases gross tons, that use the terminal facilities.

Take accounts 2 to 10, which are the tracks and which are used by the cars containing the freight; that apportionment between intrastate and interstate is on the basis of gross tons of loaded cars handled on those tracks. And it seems to me no fairer basis could be used.

When we come to 'buildings, platform,' where the less-than-carload freight is handled, the division is on the basis of the net tons; so all the way through this division. The apportionment between intrastate and interstate is on the basis of the tons that use the facilities—or on the use basis.

Of course, there are certain accounts in here like 'superintendence' again, that are overhead expenses and are divided on the basis of other accounts. But still that is just the same as the use basis. They are divided on the basis of direct expenses, the latter having been apportioned on the use basis. That runs all the way through this section of the formula.

Q. And what you said covers 'maintenance of equipment' as well?

A. Yes, sir.

Q. On page 35, the 'Transportation expenses' are treated. The word 'consignments' is used in some instances there, is it not? Such as in 'Station employees,' Account No. 63.

A. Yes, sir. I forgot to mention that. The expenses of employees in the station are divided on the basis of the number of consignments—that is, the number of shipments—which is an entirely proper basis because it very frequently happens that one way-bill—a so-called 'blanket' way-bill—will cover a number of shipments or consignments, and there will be practically the same amount of work in connection with each consignment as if separate way-bills had been made for each consignment. In fact, there are some railroads in the east and southeast which are making a separate way-bill for each consignment. The division on those roads would be on the basis of the number of way-bills.

Q. To what class of employees does that refer?

A. That refers to clerical expense, the clarks or the man who makes the way-bills, and records them at destination. A separate freight bill must be made for each consignment. A blanket way-bill may cover fifteen consignments, consigned to fifteen different firms or persons in a city; and a separate freight bill must be made for each one, notwithstanding the fact that that was all covered by one way-bill and all moved in one car.

Another item I should have mentioned, that is not apportioned on the basis of the tons, is the 'terminal yard' expense. That is based on the respective number of state and interstate cars of freight received and forwarded. And the cars that contain both state and interstate freight are counted one-half a car to each class.

This is on the theory that it costs substantially the same for terminal service for all the state cars—that is, the same average for all of the state cars and for all of the interstate cars, regardless of the fact that one may contain forty tons of freight and the other five tons of freight.

This refers only to the 'yard' expenses, the switching and placing of cars.

Q. There are different classes of employees, or rather employees who discharge each class of service in the station and terminals?

A. Yes, sir.

Q. Their expense, I suppose, is assigned in accordance with the class of service rendered?

A. Yes, sir. For example, if there is a station where the agent is also a ticket agent, he has a ticket clerk or ticket seller, the wages of that ticket clerk would be assigned to 'passenger' and 'passenger terminal.' Then his wages would be assigned between intrastate and interstate according to the number of passengers at that station.

And if he were a way-bill clerk, it would be assigned to 'freight' or to 'terminal freight expenses' and be divided on the basis of the number of consignments handled at that station.

So, all the way through, each employee is assigned to the character of service he performs—or, assigned to the expense incurred by the service he performs.

Q. The difference in the method you have just described, and that pursued by the state in preparing its exhibits in the Iron Mountain case, is that all expenses were lumped without discrimination and then divided on a tonnage basis, is it not?

A. Yes, sir. And I have been impressed with the fact that those men had the same end in view that we have in this new formula, except they attempted to reach that end by arbitrarily adding to the mileage 50 per cent. to local mileage and switching, counting engine equipment as two and one-half cars, to equate their factors, etc. While in this formula we have attempted to go right to the expense, without any equation of factors, and get at the actual expenses just as nearly as it was possible to do so.

Q. This formula is based on the detailed analysis

of the different classes of service rendered and the expense incident to that class?

A. Yes, sir; it is.

Q. And that was lacking in the other method?

A. Yes, sir. This is a very expensive formula to prepare and it may be that the expense deterred all of us from going into the detailed analysis as we have done in this instance.

And then, there is another feature. In this formula the statistics that were necessary for making the apportionment have been gathered currently as the business was going on. It was impossible to gather those statistics on past business; that is, it is impossible for us now to go back to 1912 and gather statistics similar to these covered in November and December, 1913, because the records do not disclose the different details.

It is necessary to organize your force and tabulate these figures currently as the business is moving. And unless the statistics were kept in such elaborate detail all the time the expense of which would make it prohibitive, it would be impossible to go back and compile the data for any prior period." (317-320)

There can be no serious challenge of the basis of apportionment here employed. The factors used for each apportionment are shown at the head of the respective columns of each exhibit.

Division of Passenger Terminal Expenses Between State and Interstate Passenger Traffic.

Exhibit No. 16.

This exhibit contains a division of terminal passenger expense (after the exclusion of mail and express proportion, as set forth in Exhibit No. 12), between intrastate and interstate traffic on the basis of the formula (pp. 31, 32 and 33). In connection with the exhibit we call attention to the following statement from the testimony of Mr. Nay:

"The same theory runs all through the division of

the passenger terminal expense; that is, after segregating mail and express, the passenger proportion is divided on the basis of the passengers using the facilities. Not the passengers one mile here, because these are terminal expenses and the passenger who travels ten miles makes substantially the same use of the terminal as the passenger who travels 100 miles. The basis of the number of passengers getting on or off the train and using the station or other facilities, I think is the proper basis for division. I thing the formula speaks for itself. That same principle is used all the way through. (317)

The factors used for each apportionment are shown at the head of the respective columns of each sheet. There is an effort made to challenge these apportionments by argument but none by evidence.

COMPILATION OF PRIOR EXHIBITS BRINGING OUT EXCESS COST OF STATE OVER INTERSTATE TRAFFIC FOR TEST PERIOD.

EXHIBIT NO. 17.

This exhibit brings together and consolidates the expense incurred in each of the several branches of the revenue-producing freight and passenger service, as developed in the preceding exhibits by the application of the results of the test to the traffic actually conducted in each branch of the service in the state during the test period, thereby obtaining the unit of cost per ton mile and per passenger mile of the intrastate and interstate freight and passenger business, respectively, and establishing the cost relation between the intrastate and interstate branches of the two classes of traffic. It may conduce to a better understanding if we explain the manner in which the exhibit was made up. The exhibits which precede it, and accompanying explanations, describe in some detail how the expenses of November and December, 1913, were assigned to the state, and divided

between line and terminal, freight and passenger, the non-revenue service adjusted, and the expense of mail and express traffic excluded from the passenger expenses. Following that the division between intrastate and interstate traffic of the freight and passenger, line and terminal expenses, respectively, is explained. The final results of these divisions are shown separately in Exhibits 13, 14, 15 and 16. In Exhibit 17 the results of all these divisions have been assembled and the total intrastate passenger expense, line and terminal, added together, the total intrastate freight expense, line and terminal, added together, and so with the interstate, line and terminal, freight and passenger, and the total cost of each class of traffic shown. There is then shown the number of passengers one mile and tons one mile, intrastate and interstate, separately. The intrastate passengers one mile are divided into the total intrastate passenger expenses shown on the exhibit, and by this process the operating expenses per passenger mile for intrastate passenger traffic has been determined. The same process is followed with the interstate, the interstate passenger miles being divided into the interstate passenger operating expenses and the cost per interstate passenger mile ascertained. The exhibit then shows the relation between these two costs per passenger mile, and that the intrastate cost per passenger mile was 15.43 per cent. in excess of the passenger mile cost of the interstate.

The same process is followed with respect to the freight, the tons one mile of each class, intrastate and interstate separately, being divided into the total operating expenses of each class of freight. The operating expenses per ton mile of each class is thus obtained and the exhibit shows the relationship of these ton mile costs, which is that the intrastate exceeds the interstate by 319.58 per cent.

In former rate cases it has been conceded by all parties there there is an excess cost incident to the conduct of intrastate business, both freight and passenger, over interstate traffic. What this extra cost was in amount has heretofore rested upon expert opinion evidence. In the Arkansas Rate cases, reported in 230 U. S., the accountants for the state did, as heretofore mentioned, attempt in a crude way to work out this extra cost. Their work, however, was predicated almost entirely on assumptions, and, owing to their restricted facilities for gathering data, did not go very far into the details of operation. In the investigation, which has been referred to in this case as a test period, covering the months of November and December, 1913, the effort has been to work out the extra cost of intrastate traffic through a first-hand analysis of operating conditions conducted concurrently with the practical every-day operation of the railroad, the final results of which are shown in this exhibit.

Having determined the cost relationship of the intrastate to the interstate traffic, they have been applied to the division of expenses between the intrastate and interstate freight and passenger separately in the entire year ending June 30, 1913.

This exhibit is for the information of the court reproduced as appendix No. 3, and appears at page 305.

Apportionment of Property Values, Taxes, Rentals and Hire of Equipment.

Exhibits 18, 19, 20 and 20-A.

The total value of the property used in conducting transportation within the state is agreed to in a stipulation which is found at page 906 of the printed

record. The testimony of F. G. Jonah, the chief engineer of the railroad, and other witnesses familiar with the property, was taken prior to the agreement, and the results of their evidence are embodied in Exhibit No. 18, which also contains a distribution thereof among the various classes of traffic. The agreed valuation is less than that of the chief engineer, and scales it down horizontally to an amount which is 73.24 per cent. of the value as shown in said exhibit. The reduction does not disturb the proportions of value assigned in Exhibit 18.

The apportionment was made in compliance with the rules prescribed in the formula, page 38, 38-A, 39 and 39-A. The apportionment thus made follows the division of operating expenses, and is explained in the testimony of T. A. Hamilton at pages 249 and 446.

> "As I have stated, we divide the value of the property on the basis of the division of operating expenses, not in a lump, but, as Exhibit No. 18 shows, each class of property separately.
>
> The reason for that is this: We have assumed here and think we have succeeded in dividing our expenses on the basis of the use made of the property. If that is true, then the results of our division of the expenses reflects the use, and we have used those results to divide the property on the use basis in accordance with what we understood to be the Minnesota decision.
>
> Take Exhibit No. 18 as a text: We divided the property there, the roadway and structures—it is all set forth in the exhibit, but I will state it briefly—on the basis of the assignment of transportation expenses. That reflects the money spent in using, in a large measure, the roadway and structures in running trains over it and hauling traffic.
>
> So we felt that the transportation expense division, which we think has been made upon the basis of the use made of the property, might fairly be used to divide the roadway and structure value.
>
> Then as to locomotive equipment, we divided that

upon the basis of locomotive repair expenses, which we felt had been divided, through these various steps and ultimately between state and interstate, freight and passenger, on the basis of the use made of the locomotives.

We followed the same plan for passenger cars and freight cars. I think there was one exception there where we could assign direct, and that was some mail cranes, masts and arms, for taking mail onto a moving train, and we charged those direct to the mail. That is the theory on which that was handled. (249, 250.)

Judge Hill asked me why I had made my line division of property on the basis of transportation expenses and not upon the engine ton mile which I had used to divide the maintenance of way expenses. As a matter of fact, I thought that the maintenance of way expenses themselves, in this period, might or might not be reflective as between line and terminal. I know that the transportation use of the property, in a broad sense, was full every day in the year and, therefore, used that.

Following Judge Hill's suggestion we reworked those figures using the engine ton mile division. I have not prepared them in the form of an exhibit, but I have the effect of it here and have all the detail papers, which I will be glad to submit to the accountants for the State. I can make an exhibit out of it if desired, but I have not had the opportunity as yet.

I have made the apportionment of line values on the engine ton mile basis, as suggested by Judge Hill, and, taking the year ended June 30, 1913, as an example—we had time only to work up one of the years —I found the concrete effect of it is to reduce the value of property assigned to intrastate freight, 19 per cent.; to increase the value of property assigned to intrastate passenger, 18 per cent., and to make little or no change in the total intrastate values.

Carried with that change in the value of property is a change in the apportionment of taxes, which also goes to affect the return upon the various classes of intrastate business. The concrete result of the change, applied to Exhibit No. 22, is to change the

return on intrastate freight from 1.07 per cent. to .23 per cent.—that is, 23/100 of 1 per cent.—to eliminate entirely the return of almost 2 per cent. on intrastate passenger, and to leave the return upon the total intrastate business so small that you cannot find it with a microscope.

So, really, the engine ton mile basis makes no vital difference in our figures. I might have used it; I believe in it, but for the reason stated, I used the transportation expense. I have heard a great deal of commendation among railroad men of the revenue train mile. I have not worked that out here, but I believe the engine ton mile is, perhaps, a more reflective basis. If applied the other might show somewhat similar results.

Summing up the whole proposition, the change that we would make in our Exhibit No. 22 would still leave us a deficit of $32,000 on our total intrastate business. Of course, that is not affected by the change in the property values on the engine ton mile basis of distribution except as it switches the taxes a little bit, and that is a negligible change. We still have not sufficient to pay expenses and taxes on the face of this exhibit, so really the property value division becomes immaterial." (446, 447.)

The exhibits for the separate years in this case show that the earnings on the basis of the challenged freight and passenger rates are not sufficient, in any of the years covered by the investigation, to pay the expense of operation, except that in the fiscal year 1910 there was a net earning on intrastate freight traffic of 0.064 per cent. The matter of the valuation, therefore, ceases to be of any particular importance in this case.

Exhibit 61, which shows the average earnings of the four years, 1910 to 1913 inclusive, and in which the Kansas City, Fort Scott & Memphis Railway rental charge is eliminated and the stipulated value of the property used, shows a return on the intrastate freight business in the year 1910 of 32/100 of one per cent.; 1913, 31/100

of one per cent., and a deficit in each of the other years. For the intrastate passenger business, it shows a deficit in each one of the years, except in 1911, which shows a return of 1.26 per cent., and on the total intrastate earnings, freight and passenger combined, a deficit is shown in each of the years.

The method of apportionment of taxes, rentals and hire of equipment is explained in detail in Exhibits 19, 20 and 20-A. There is no controversy over these apportionments, and it is necessary, therefore, only to call the court's attention to the exhibits explaining the matter.

APPORTIONMENT OF OPERATING EXPENSES TO ARKANSAS FOR THE YEAR ENDING JUNE 30, 1913, AND DIVISION THEREOF BETWEEN FREIGHT AND PASSENGER, STATE AND INTERSTATE AND MAIL AND EXPRESS.

(Exhibit No. 21.)

This exhibit, as the heading indicates, contains an apportionment of operating expenses to the State, and the division of such expenses between freight and passenger, intrastate and interstate, mail and express, for the fiscal year ended June 30, 1913.

It sets forth in detail the application to the operating expenses for the fiscal year ending June 30, 1913, in their division between the intrastate and the interstate, of the percentages of excess cost of the intrastate business determined in the test conducted in November and December, 1913, shown in Exhibit No. 17. The following statement copied from page 1 of the exhibit will serve to explain how the application was made:

> "The operating expenses assignable to the State of Arkansas for the year ending June 30, 1913, and the division thereof between freight and passenger

service, were determined in accordance with the provisions of the formula filed as Exhibit No. 1, and the modifications thereof, as set forth therein, adopted by the St. Louis and San Francisco Railroad. (See also explanatory Exhibits Nos. 2 and 3.)

One exception made in following the basis laid down in Exhibit No. 1 (as modified) was in the adjustment, between the various classes of service, of the non-revenue service costs. The principle laid down in the formula was followed, but the adjustment of the non-revenue service costs for the year, was made on the basis of the similar adjustment for the months of November and December, 1913, as set forth in Exhibits Nos. 10 and 11. That is to say, the percentage of burden or relief on account of non-revenue service performed by one revenue service for the other in November and December, 1913, was applied in making the adjustment of non-revenue service costs in the operating expenses of the year ending June 30, 1913.

Another exception, in detail but not in principle, was that the passenger operating expenses in the five Interstate Commerce Commission groups under the heads of Maintenance of Way and Structures, Maintenance of Equipment, Traffic Expenses, Transportation Expenses and General Expenses, determined as hereinbefore set forth, for the year ended June 30, 1913, were divided between passenger, and mail and express on the basis of the relative percentages of car foot miles in mail and express and passenger carrying service, as determined for the months of November and December, 1913.

The proportion of passenger expenses chargeable to passenger carrying service (after elimination of mail and express proportion) was divided between intrastate and interstate passenger traffic on basis of the respective passenger miles of each class for the year ending June 30, 1913, there being added, however, to the intrastate passenger miles 15.43 per cent., in arriving at factors for this division, this percentage representing the excess cost per passenger mile of intrastate passenger traffic over interstate passenger traffic, for all passenger operating

expenses in the months of November and December, 1913, as set forth in Exhibit No. 17.

The freight proportion of operating expenses, determined as hereinbefore set forth, was divided between intrastate and interstate on basis of the respective ton miles of each class for the year ended June 30, 1913, there being added, however, to the intrastate ton miles, in arriving at factors for this division, 319.58 per cent., this percentage representing the excess cost per ton mile of intrastate freight traffic over interstate freight traffic, for all freight operating expenses in the months of November and December, 1913, as set forth in Exhibit No. 17."

In order that there may be no misunderstanding, we here call attention to the fact that the expenses appertaining to the total business in the State were actually allocated and assigned to the State by an analysis of the records of the company for the entire fiscal year, proceeding on the basis laid down in the formula filed as Exhibit No. 1. These actual State expenses for the fiscal year were divided between the freight and passenger services in detail for the entire year, the factors developed in the test period being applied to the division between freight and passenger in so far only as the adjustment of the non-revenue service costs between freight and passenger were concerned. This is set out in a note to page 2 of the exhibit.

In dividing the passenger expenses for the year between passenger and mail and express, the car foot mile percentages of the two months test period were applied, which is also shown in a note to page 2 of the exhibit. With these two exceptions the expenses of the fiscal year were allocated to the State and divided between the freight and passenger services in detail in accordance with the provisions of the formula.

In dividing the freight and passenger expenses between intrastate and interstate for the year ended June

30, 1913, the actual intrastate and interstate passenger miles and ton miles of that year were used as factors, with the addition to the intrastate ton miles and passenger miles of the extra cost percentages developed as shown in Exhibit No. 17. These divisions between the intrastate and interstate business are set forth in detail in Exhibit No. 21, and the resultant figures of operating expenses chargeable separately to intrastate and interstate freight and passenger carried directly into the income account statement for the fiscal year which appears in Exhibit No. 22.

This exhibit is for the information of the court reproduced as appendix No. 4, and appears at pages 306 to 310.

EARNINGS, EXPENSES, TAXES, RENTALS, HIRE OF EQUIPMENT AND RATE OF RETURN FOR YEAR ENDING JUNE 30, 1913.

(Exhibit No. 22.)

This exhibit shows in detail the earnings and expenses, taxes, rental and hire of equipment upon each class of business conducted by the Railroad Company within the State of Arkansas for the fiscal year 1913, as ascertained in preceding exhibits which are referred to by number, and shows the net income derived from each class of business available as a return on the value of the property employed in each class of service, after deducting from the total operating revenues the operating expenses, State and Federal taxes, net rental and hire of equipment, and then shows the percentage of return yielded by each class of the business. The method used in dividing taxes, rental and hire of equipment, has been explained in connection with Exhibit 5.

The earnings are not based on the inhibited passenger and freight rates. After the injunction was granted, the Railroad Company reinstated the rate of three cents

per mile that had been in effect before the Act of February 9, 1907, prescribing a rate of two cents per mile, and this three-cent rate was in force during the entire fiscal year 1913. It also put into effect a schedule of freight rates higher than those prescribed in Standard Freight Distance Tariff No. 3, which was later modified, under an order of the court and a schedule of freight rates promulgated which were designated and commonly known as the "Court Rates," and these rates were in force during the fiscal year 1913. This is referred to in a note at the bottom of the exhibit, and the diminution in revenues upon the application of the inhibited rates to the business of the year, and the balance then available as a return on the value of the property, are set out, with the result that the net earnings on the intrastate freight business of the year, under the enjoined rates, would have been $800.15, and there would have been a loss on the intrastate passenger business of $65,428.85, and a loss on the freight and passenger combined of $64,628.70.

The value of the property upon which a return is compiled in this exhibit is that found by the plaintiff's chief engineer and not the value stipulated subsequent to the introduction of this exhibit in evidence. The return on the stipulated value, including all corrections made during the trial of the case, is shown in Exhibit No. 61.

This Exhibit No. 22 is for the convenience of the court reproduced as appendix No. 5, page 311.

EXPLANATION OF METHOD EMPLOYED IN ASCERTAINING EARNINGS AND EXPENSES ASSIGNABLE TO ARKANSAS AND TO FREIGHT AND PASSENGER, STATE AND INTERSTATE, MAIL AND EXPRESS TRAFFIC, FOR THE VARIOUS PERIODS INVOLVED.

(Exhibit No. 23.)

This exhibit contains in detail an explanation of the method employed in ascertaining the earnings and expenses assigned to Arkansas, and to the freight and passenger, intrastate and interstate, mail and express traffic, in the years ending June 30, 1910, 1911 and 1912 and for the 4 months ending December 31, 1907, the results so ascertained being carried forward and set forth in Exhibits 24, 25, 26 and 27.

It was deemed advisable to determine the effect of the inhibited rates on the earnings of the property during the preceding periods. It was impracticable to go back and make the same detailed analysis of the business as was made for the fiscal year 1913, and it was unnecessary to do so, for the Railroad Company, in making its reports to the State Railroad Commission after the year 1909, had made an assignment to the State upon a uniform basis, or formula, which it used in the year 1913, and is still using. It also had a formula which it used to divide expenses between freight and passenger service for its own operating comparisons. It had the result of the application of the old formulae (sometimes referred to as the Douglas formula), to the earnings and expenses in the State, and the earnings and expenses of the system in assigning them to the State, for the fiscal year 1913. It also worked up the result of the application of the new formula to the business of that year in minute detail account by account. It was found that the result of the application of the new formula to

the earnings and expenses bore a certain relation to the result of the application of the old formulae. Thus a given assignment of earnings and expenses to the State under the new formula would be, say, 98 per cent. or 102 per cent. of what is reported to the State Railroad Commission, under the old formula, and so on throughout the various divisions of the State traffic.

The comparison of the two formulae and the equating of the results obtained under the old formula in former years was equivalent, in effect, to going back and working up those years in detail on the basis of the new formula, and the relationship of the two formulae could be expressed in percentages.

The method pursued in making these equations is explained in Exhibit 23, pages 1 and 2, and the results of the application of the old and the new formulae in the assignment of the various classes of earnings to the State, in the assignment of operating expenses, freight and passenger, to the State, and the apportionment of expenses assigned to the State between freight and passenger business under the old and the new formula, expressed in percentages, are shown on the succeeding pages of the exhibit, which is printed in appendix No. 6, pages 313-21. We think the explanations contained in the exhibit in connection with the testimony of the witnesses Hamilton and Nay, at pages 103 and 332 of the record, will convey a clear understanding of the plan followed in making the equation and its effect. Referring to this subject, Mr. Nay testified:

> "I understand that they took the earnings or revenue, first; that they were redivided on the basis of this new formula and compared with the original results arrived at by the auditor.
>
> For the entire year 1913, and it was found that the results under the new formula, in each item of the earnings, was a certain percentage of the re-

sults under the old formula, and then those percentages were applied to the earnings of 1912, 1911, 1910, and the four months of 1907. Take the freight earnings: It is shown here that the percentage under the two formulas was 100.82 per cent. interstate, and 100 per cent. even intrastate. Of course, there would be no difference in the intrastate.

It was assumed that the difference between the results of the two formulas would be the same percentage in prior years, and I think it is a fair assumption that if the figures had been worked out in detail it would produce substantially the same result. There might, perhaps, be a difference of a few dollars due to the fractions, but the results produced by that equation are right.

Q. Is that a correct principle of cost accounting?

A. Yes, sir; and it would not matter if the old formula was wrong, the relations between it and the new formula would remain the same. It would always be the same, whether it applied to one year's business or another.

Q. The equating would overcome any error that might exist in the formula as used in previous years?

A. It would if the new formula is correct, and I believe the new one is correct. What I meant is the equation would reduce the figures of the former years to the basis of the formula now before us, and that is true of operating expenses as well as of earnings. I understand that a similar method was followed in connection with operating expenses: That it was found that under the new formula the operating expenses were so much; under the old formula they were so much, and the relation of each one of the five classifications—maintenance of way and structures; maintenance of equipment, traffic expenses, transportation expenses and general expenses was found, and then that same relation was applied to those five general headings of operating expenses for the previous years.

A. I think that is a fair and accurate method of reducing those earnings and expenses to the basis of the new formula. Of course, as I said before, if they were worked out in detail, the results would

> probably be a few dollars different one way or the other, but they would not be substantially different." (332, 333)

The relationship employed in the processes of equation described, based upon the complete application of both the old and new formulae, in the year 1913, is set out in detail in the figures contained in Exhibit No. 23, and the percentage relations thus established are applied in Exhibits 24, 25, 26 and 27-A to the earnings and expenses for the preceding years. The percentages thus applied are shown on pages 3 and 4 of Exhibit 23. Ninety-eight per cent. of the intrastate earnings, consisting of freight revenue, passenger revenue and special service train revenue, was susceptible of actual allocation so that the process of equation was only applied to 2 per cent. of the earnings.

The trial court considered this equating process very carefully and very fully (Rec., 913-15; 222 Fed., 544-6), concluding his consideration in the following language (Rec., 914-5; 222 Fed., 546):

> "In the opinion of the court, if correct factors are used, and the court finds that they were, this method of equation will secure results as nearly correct as is possible, when no separate accounts of the cost of the two classes of traffic have been kept."

This exhibit is for the information and convenience of the court reproduced as appendix No. 6, and appears at pages 313 to 321.

ASSIGNMENT TO ARKANSAS AND APPORTIONMENT BETWEEN FREIGHT AND PASSENGER, STATE AND INTERSTATE AND MAIL AND EXPRESS TRAFFIC OF EARNINGS, EXPENSES, TAXES, RENTALS, HIRE OF EQUIPMENT AND VALUE OF PROPERTY: ALSO RATE OF RETURN EARNED, FOR THE YEAR ENDING JUNE 30, 1912.

(EXHIBIT No. 24.)

We now call attention to Exhibit 24, where the application of the method of equating is made to the business of the fiscal year 1912. It contains a complete statement of earnings and expenses in the State of Arkansas, apportioned as between the various classes of traffic. The first matter treated of is the apportionment of taxes. These are the actual taxes accrued in that year, and are apportioned on the basis of the division of property values, in the same manner as in the year 1913, as has been explained. It also shows the division of the actual rents, both charges and credits, for the year 1912, and the apportionment of hire of equipment charges actually incurred within the year, on the basis described in connection with Exhibit 22. On page 12 of the exhibit the equating percentages are applied, placing the earnings and expenses assigned to the State, and divided between freight and passenger and mail and express, upon the proper basis through the methods described in Exhibit No. 23.

On page 13 will be found the tables showing the equations of expenses on the bases of the percentages previously described. On page 14 these expenses, after their assignment to the State, and division between freight and passenger services in the preceding pages of the exhibit, are subdivided between intrastate and interstate, freight and passenger, separately, through the application of the percentages of extra cost intrastate over interstate, de-

termined in 1913, to the actual intrastate ton miles and passenger miles of the year 1912. The complete results for the year are shown on page 15 in the same form as in Exhibit 22 for the year 1913. The gross revenues from intrastate freight business were insufficient by $30,692 to pay operating expenses, taxes, rentals and hire of equipment. This is shown on the face of the exhibit. During that year the intrastate passenger traffic was on the basis of three cents a mile. Had the inhibited rate been applied, the exhibit shows that the intrastate passenger earnings would have been insufficient, by the amount of $38,078.18, to pay the expenses of the intrastate passenger business, taxes, rentals and hire of equipment and that there would have been a deficit of $69,770.19 in the conduct of the intrastate freight and passenger business combined. In this exhibit, and in Exhibits 25, 26 and 27-A, covering the preceding periods, 98 per cent., in round figures, of intrastate revenue, and all of the taxes, rentals and hire of equipment charges, are the actual figures pertaining to those periods, and are not produced as a result of the equating process; and when we come to the division of expenses between intrastate and interstate in all of these periods, the actual ton miles and passenger miles of each period are used, with the addition of the extra cost percentages determined in 1913, so that the equating process applied only to the assignment of 2 per cent. of the revenues and to the operating expenses in their assignment to the State and in their division between freight and passenger.

Exhibit 24 is typical of the three that follow, and what has been said in regard to it is equally applicable to the others. In this connection we call attention to the following evidence of Mr. Hamilton:

> "Exhibit 24 covers completely the results for the year ended June 30, 1912, arrived at on the basis which I have just described. I want to say, how-

ever, that after we got the earnings assigned to Arkansas, and had the expenses assigned to Arkansas, and divided them between freight and passenger service on the basis of this equation, we then divided them between interstate and intrastate on the basis of actual ton miles and passenger miles hauled in each of those years, state and interstate, with the same percentage of extra cost that underlies the whole thing.

In 1912, we were operating under the court tariff and on a three-cent passenger rate. On the basis of the court tariff rates, we did not earn enough to pay freight operating expenses, taxes, rentals and hire of equipment. On the basis of the three-cent passenger fare 4.34 per cent. If we had charged a flat two-cent rate, on the same volume of traffic, we would have been $38,000 short of earning our operating expenses, taxes, rentals and hire of equipment. There would have been a deficit." (104)

The equation rests upon the relationship of the results of applying the formula used by the railroad in making its reports to the State Railroad Commission, and for other purposes, and the new formula filed in this case. Mr. Hamilton, who is an expert cost accountant, as well as a man of very large experience in all branches of railroad accounting, and many branches of operation, stated of it:

"This equating process, as a matter of mathematics, is sound. I do not think anybody will dispute that. It needs only the assurance that the company's old formula results, upon which the equation rests, have been obtained upon a uniformly applied basis throughout all of the periods involved." (848)

At the time these exhibits, including also Exhibit No. 22, were prepared by the accountants, it was assumed that an annual rental charge paid for the Kansas City, Fort Scott & Memphis Railway, a leased line, should be included in the operating expenses, but the matter having been brought to the attention of the court during the taking of the evidence, it was held that the rental was

not a proper charge, and Exhibit 28, *eliminating that charge from the expenses shown in Exhibits* 22, 24, 25, 26 *and* 27-*A and showing the effect thereof, was prepared and filed.*

Defendants did not contest the soundness of the principle upon which the equation is based, but attacked it collaterally, so to speak. They introduced Mr. L. N. Simson, a cost accountant, who testified that the equating method had been applied only to the sub-total classifications; that is, to the total of maintenance of equipment, maintenance of way, transportation, traffic and general expenses; that had the percentages of difference been applied to the individual Interstate Commerce accounts, the equated figure for the four months ending December 31, 1907, would have been less than the equation of subtotals by $7,397.80. (612, 613) Mr. Hamilton was examined in regard to that, and testified that he had made the equation by individual Interstate Commerce Commission accounts, as Mr. Simson suggested it should be, and adjusted the company material burden as between freight and the passenger side in accordance with his views, and applied the per cents. resulting to each individual Interstate Commerce Commission account as assigned under the old formula to freight and passenger separately. If the equation had been made of the expenses in that way in detail, instead of assigning $7,397.80 less to the State of Arkansas, it would have assigned $8,400.38 more. (824)

In applying the old formula used in the year ending June 30, 1913, to the assignment of expenses to the State, the Auditor made some clerical errors. These were discovered by the accountants for the State in the course of their examination of the railroad records, and their nature and amount were explained by Mr. Simson in his testimony in connection with Exhibit G. The examina-

tion of the records showed that the Auditor, in the assignment of expenses in the formula used by him, assigned $72,107.48 to Tennessee, which should have been assigned to Arkansas under his formula. This grew out of a clerical error in the division of the terminal expenses at Memphis in the State of Tennessee. Upon investigation Mr. Hamilton found that Mr. Simson's statement was correct. They agreed that the error made a difference in the results of the equating process of $23,080.62, and that the expenses in Arkansas for the four months ending December 31, 1907, would be reduced for freight transportation $16,977.90, and for passenger transportation $6,102.72. (611, 839) Mr. Hamilton further testified that he did not discover the error in the application of the old formula until it was called to his attention in connection with Exhibit G, filed by Mr. Simson. That as soon as it was discovered, he worked the mistake out through all the calculations contained in Exhibit 27-A, and the result was that after the correction of the error, the gross earnings from intrastate business shown on that exhibit still left a deficit of $807.23 in operating expenses, with nothing to apply to the payment of taxes. (839-40)

At page 614 of the record Mr. Simson referred to certain items of expense which he stated should have been added to the State of Arkansas by the auditor in addition to the Memphis terminal item, which he treats of in Exhibit G. These items are yard supplies and expenses, wages of yard conductors and brakemen, wages of station employees, station supplies and expenses, and injuries to persons. Mr. Hamilton, being recalled on this point, stated that he made an investigation of the matters about which Mr. Simson had testified, and made the following explanation:

"As I understood Mr. Simson's statement, it was

that Mr. Douglas claimed to have made a direct allocation of certain items to the State of Arkansas, and that we did not get the same results when we made what we call a direct allocation under the new formula.

There seems to have been some misconception of what those items were.

Mr. Simson kindly loaned me his working sheets on that and I went over them. We found that they are a very large part of the same items that Mr. Simson reflects in his Exhibit G.

We will come to Exhibit G a little later, but the connection might as well be established here as not.

Exhibit G shows that in following what we term the 'old formula,' or, rather, our general auditor's regular formula for assignment to States, in the year 1913, Mr. Douglas set up part of the Memphis terminal expenses, which, on the basis of his formula, were properly chargeable to the State of Arkansas. Then, through a clerical error in his statistical department, those items were charged to Tennessee.

We, of course, based our equating percentages in 1913, in good faith, on Mr. Douglas' original assignment.

But we put that money actually into Arkansas, every dollar of it. Because we made a correct allocation.

So, then, the per cents. that we obtained did not reflect the proper equation, so far as those items were concerned.

Mr. Simson shows that in his Exhibit G, which I will show later.

I find in tracing out the items which Mr. Simson mentions on those pages of the records, that they are included in the same items which appear in Exhibit G.

So our direct allocation was not so very different from Mr. Douglas'. In fact, the spirit of them was not very far apart.

There can be but one construction of that, that these were items that did not require divisional or entire line prorate. They were practically all station and yard expenses, which would locate themselves geographically. We did not have to make a

prorate of them, except at the middle of the river at Memphis.

Mr. Douglas did directly allocate these items, but through an error of a clerk in his office, the Arkansas proportion was put in the Tennessee column. That is the whole thing in a nut shell. It is the same stuff that appears again in Exhibit G." (825)

Mr. Oliver, another accountant employed by the defendants, made the discovery that the auditor of the Railroad Company, in making the assignment of expenses to Arkansas under the formula used by him in 1907, had made certain errors in the month of September. The criticism was that the auditor did not use the formula consistently throughout, but used a different basis in September from that used in the following three months of that period.

The attention of Mr. Hamilton was called to it during the cross-examination, and upon looking into it he testified that Mr. Oliver was correct. The matter is explained by him at page 272, and the following pages of the printed record. He was then asked what effect the correction of the clerical errors spoken of would have on the assignment of expenses to the State made by the Auditor under the old formula in the four months of 1907, and testified:

"A. The corrections of the clerical errors and the reworking of Mr. Douglas' figures to make his application of his formula in September line up with what he did in the other three months (and has done ever since down to this present date), would make the following change in the figures that we showed in our Exhibit No. 27, covering those four months:

That is to Arkansas expenses in those four months —it would add for the 'Maintenance of Way and Structures,' $1,525.61.

It would deduct from the Arkansas expenses—because Mr. Douglas had over-assigned to Arkansas—from 'Maintenance of Equipment,' $2,524.48.

It would deduct from the 'Traffic Expenses,' charged to Arkansas by Mr. Douglas, $567.42.

It would deduct from the 'Transportation Expenses,' assigned to Arkansas by Mr. Douglas, $46,353.06.

It would deduct from the 'General Expenses,' charged to Arkansas by Mr. Douglas, $479.85; or a total net deduction from the Arkansas expenses, as Mr. Douglas assigned them (which we equated, of course, in our Exhibit No. 27) of $48,399.20.

Q. (By the Court): You mean, from the entire Arkansas busines, or the interstate business?

A. All the business within the State. That is just the gross assignment to Arkansas.

Q. Have you reworked Exhibit No. 27 for the purpose of showing the effect of those deductions?

A. Yes, sir; I have here Exhibit No. 27-A, which is an exact reproduction along the lines of Exhibit No. 27, with these deductions of overcharge in expenses to Arkansas.

Q. So the assignment of expenses to Arkansas on the basis of Mr. Douglas' old formula, in your exhibits covering the years ended June 30, 1913, 1912, 1911 and 1910, and the four months ended December 31, 1907, are now upon a uniform and consistent basis of division after you made the corrections in Mr. Douglas' 1907 figures, which you have explained?

A. Yes, sir; they are.

I have gone carefully over Mr. Douglas' application of his old formula for assignment of expenses to Arkansas and scrutinized his working sheets in detail for the years ended June 30, 1913, 1912, 1911, 1910, and the four months ended December 31, 1907.

After correcting the clerical errors in the four months of 1907, and the misapplications of the formula in the one month of September, the basis of division applied by Mr. Douglas in assigning expenses to Arkansas in these years—1912, 1911 and 1910—has been in exact agreement with the basis that Mr. Douglas used, item by item, in the year ended June 30, 1913.

We have been carefully over that entire ground, and know whereof we speak.

Further, after making this deduction of $48,399.20, as reworked in Exhibit No. 27-A, the four months

ended December 31, 1907, are also now, as to basis of division, in exact agreement with the methods employed by Mr. Douglas in the year ended June 30, 1913.

Q. Did I understand you to state on cross-examination that in your exhibits you have not accepted Mr. Douglas' assignment of expenses to this State as properly chargeable in the various periods which are covered by these exhibits?

A. No, sir. As an academic proposition, I think Mr. Douglas' bases are wrong. They are are not all use units, by any means. What we have done, however, is to determine the relation of what Mr. Douglas' formula brought in 1913 to what we got by completely reworking 1913 on a basis of our new formula, Exhibit No. 1, and when we had established that relationship we equated Mr. Douglas' assignment in the years 1912, 1911, 1910, and these four months of 1907, to a new figure on the basis of that 1913 relationship between the two formulas, and that is all explained in Exhibit No. 23.

But it does not make much difference whether Mr. Douglas divided these expenses in all these back periods by engine miles or potatoes, just so he used the potatoes consistently and used them in 1913, where we made our comparison of his results with the new formula. As a mathematical proposition, our equation is correct." (274, 275, 276)

The matters referred to embrace all the grounds of attack made on the method pursued in determining the earnings and expenses in the years preceding 1913 through the process of equation. *All errors in the application of the old formula were corrected and the figures reworked in Exhibit 27-A, which takes the place of original Exhibit* 27, *relating to the four months ending December* 31, 1907. The matter is so fully explained in the testimony that further comment is unnecessary.

We have shown how they were adjusted and the clerical errors which occurred in the accounts in 1907, and in the assignment of the expenses of the Memphis terminal in 1913, were corrected and adjusted, so that the old for-

mula was applied consistently in both periods and the equation made on the basis of the adjustments, and the result shown in the corrected exhibit, No. 27-A.

The matters here discussed relate solely to the four months of 1907, *and are not involved in any of the other periods.*

This exhibit is for the convenience of the court printed as appendix No. 7, pages 322 to 339.

APPORTIONMENT OF LINE MAINTENANCE OF WAY EXPENSES BETWEEN FREIGHT AND PASSENGER.

These expenses are those chargeable under accounts 2 to 10, Interstate Commerce Commission Classification, in effect at the time of the trial of this case, and are the expenses of maintaining tracks and track structures. The formula provides for locating such expense, as far as possible, to the freight and passenger services, according to their substantially exclusive use in either the freight or passenger service. The line tracks used in common by freight and passenger trains are apportioned under the formula upon the basis of engine ton miles computed on the weight of the engine in working order. The engine ton-mile unit consists of the weight of the engine in working order multiplied by the distance it moves in freight or passenger service.

In this case all of the maintenance of way expenses, as above described, that could be definitely assigned to the freight or passenger service, or line or terminal service, were so assigned, based upon data of actual expenditures for such maintenance kept separate by individual tracks and structures through record entries made by men in charge of such maintenance work. This detailed allocation left for solution only the problem of apportioning between the freight and passenger service the

maintenance of the main line track, or as it is called in Exhibit No. 1, line track and appurtenances, which is used in common by both the freight and passenger services. This basis was adopted after a careful study and investigation, and is considered the best and most accurate basis that can be applied to these expenses. (309) The weight of the engines in the respective classes of service represents the service required of, and rendered by, such engines, both as to hauling capacity and speed at which weight is transported. In the passenger service, the heavier engine is used to get more speed, rather than haul more tons. In freight service the heavier engine is used to haul more tons, so that in both classes of service the weight of the engine represents both speed and capacity to haul tons at the different speeds at which they are hauled in the freight and passenger services. The freight engine rating is based on the loading at drag speed (10 miles per hour). If it becomes necessary to make quicker time because the freight is perishable, or for other reasons, in order to do so the tonnage must be reduced so that when speed is a factor there must be less tonnage hauled. As the speed increases the capacity to pull is reduced. The use of the line track of a railroad by the freight or passenger service consists of the movement of weight, that is, trains and their contents, over the required distance at the speed which the nature of the traffic requires for its movement and under the service conditions and vicissitudes with which railway operation has to contend. The engine ton mile was selected as reflective of the use made by each of the two classes of traffic of line track and structures.

The importance of the locomotive as a factor in considering the causes of expenditures for maintenance is well illustrated by Mr. A. M. Wellington, in his treatment of the subject in "The Economic Theory of the

Location of Railways." We quote from Section 115 thereof as follows:

> "The locomotive alone causes by far the greater portion of the wear—how much is not positively known. Freycinet, a French engineer, writer, and politician of much prominence, recently minister of public works, estimates that the locomotive does three-fourths of the damage and the train itself only one-fourth. Launhardt, a German writer on the subject, after noting the fact that the locomotive and tender together constitutes only one-fifth of the total weight of train on the Prussian State railways (it would be considerably less in this country) considers that half the wear is due to the locomotive and tender and half to the train. This in all probability is a very moderate estimate. Experience on the gravity railways in Eastern Pennsylvania worked solely by inclined planes and carrying a heavy coal traffic with the ordinary vehicles, and with all other usual conditions except that no locomotives run over the rails, shows that the rail wear even of iron rails is very slight indeed under heavy tonnage, but with light loads per wheel; but exact figures of the wear cannot be presented. Mr. O. Chanute investigated this question somewhat by placing impression paper between the rails and wheels and determining the areas of the surface in contact. He points out that the pressure of the drivers approximates to the ultimate crushing resistance of the metal, and that the pressure per unit of area is very much less with ordinary car wheels. He therefore reaches substantially the above conclusions—that from one-half to three-fourths of the total wear of the rails originates from the engine alone."

The more important reasons for the use of the locotive ton mile are stated by Messrs. Nay and Hamilton, and supported by Messrs. Frates and Symons. Mr. Nay testified as follows:

> "We had a great deal of discussion as to the best basis to adopt in connection with this division; in fact, I presume that that part of this formula was given more attention than any other part. A study was made of the engines used in freight and pas-

senger service, and it was found that the passenger engines which hauled trains at a high rate of speed were practically of the same weight as the large freight engines which moved slower but pulled heavy trains. In some cases, the passenger engines of those high speed trains are heavier. We found in studying the situation that the weight of the engine really represented the service performed as to weight and speed.

In the old formula it was urged many times that speed was not considered. The argument for using the train mile basis was that the extra speed of the passenger train offset the greater weight of the freight train.

Q. Under the old method?

A. Under the old method, but, as I say, in studying the conditions we found that the weight of the engines actually did reflect the speed, in the case of the passenger engine, and in the case of the freight engine the weight which was pulled, and also the speed; that is, for greater speed and heavier weight you must have a heavier engine; for slower speed and a lighter train, you must have a lighter engine. Then, again, when it comes to that portion of your expenses—the ties, rails, track material and ballast, to a certain extent the heavier the engine the greater the damage done to the track, so that the weight there is an important factor.

We frequently strengthen bridges, put in heavier rail and additional ballast because of heavier engines put on, not because of heavier cars.

Taking all those things into consideration, we decided that the engine ton mile basis was the best basis that we could get which would represent the use, and by use combining speed as an element of use with weight and the distance traveled. Hence, the committee which framed this formula decided on the engine ton mile basis, and it has been used." (309)

Mr. Hamilton testified as follows:

"We took the engines which actually hauled passenger trains and the miles they ran, and we multiplied the miles made by each engine drawing the passenger train by the dead weight of that engine,

making an allowance for the contents of the engine tank or tender estimated at two-thirds of its carrying capacity in water and coal. That is, we took the weight of the engine complete, in running order, everything above the rails, and multiplied it by the mileage the engine made, freight and passenger, each engine separately, building up the freight and passenger engine ton miles. We did that for the reason that the question of the division of maintenance and (of) way expense, particularly the straight main line maintenance, has always been one subject of much discussion and heretofore has been divided on the basis of the revenue train miles on the theory that the extra speed of the passenger train compensated in the use it made of the track for the extra weight of the freight train. Then, it has been contended, or it has been stated, that only a minor portion, varying from twenty-five to ten per cent. of the actual upkeep expenses of the track is directly traceable and chargeable to the wear and tear occasioned by running trains over it, and that the other ninety per cent. to seventy-five per cent. of maintenance was the result of elemental action, the erosion of the bank, rotting of ties, deterioration of rails, deterioration of fences, buildings, etc., and that would go on if you never ran a train over a track, to a large extent.

We felt, that the best basis on which to divide maintenance of way, and one that would reflect a proper division both of that portion which is chargeable to the direct wear and tear by reason of the running of trains, and that portion which would accrue if you ran no trains, would be some unit that would really measure the use we got out of the track in freight and passenger service. There was only, so far as we could see, one common ground on which the freight and passenger service could meet, and that was the engine ton miles, and for this reason: The weight of your engine denotes not only its type, but the size and character of the train that you expect it to haul. It is conditioned to the service required of it.

The train behind your passenger engine consists of fewer cars than the train behind your freight

> engine, but your passenger engine is required to run, necessarily, at a greater speed. Your freight engine is required to pull a heavier train at a slower speed. It seems to us that the size of the engine being conditioned to the speed and weight combined, and expected to be met with in your freight and passenger trains, respectively, really was the best common unit of measurement of the use that you got out of your track as between freight and passenger service, because you use your track to pull trains of varying weights, at varying speeds, the locomotives in the freight and passenger service being accommodated as to the speed and the tonnage that you must handle." (109, 110)

J. A. Frates, the general superintendent of the St. Louis & San Francisco Railroad, also testified on this subject. This witness testified that he had an experience of about thirty years in railroad service; had been fourteen years with the St. Louis & San Francisco Railroad as assistant superintendent, superintendent, and general superintendent; that he supervised the engine ratings and was responsible for knowing that they were carried out in the operation of the road. That the ratings shown on the working time tables are obtained by actual pulling tests under normal conditions, and represent the maximum tonnage that can be hauled under such conditions at a speed of ten miles an hour. He was asked if it was practicable to reach the maximum potentiality in the average every-day practice, and stated that in operation the potentiality of the engine was reached, but not the tonnage maximum. He shows that an engine may be working at its full potentiality where the conditions are such that it cannot haul its maximum tonnage. In speaking of the effect of speed in connection with efficiency in the operation of engines, he testified that an engine which would pull 100 tons ten miles an hour would probably have to reduce the ton-

nage one-half to attain the speed required in an expedite movement. Mr. Frates explained in detail the effect of fluctuations in the condition of the weather and other elements that affect the capacity of engines. He testified that the practice is to assign a certain number of engines to a certain district to move all the business in that district. The volume of traffic may be heavier in one direction than the other. In such cases the train moving in the direction of the volume would move loaded and the train moving in the opposite direction to the volume would move light, or with reduced tonnage, and in such cases it is necessary to use an engine of the size adapted to the larger volume of the traffic in the reverse direction. He also described the local conditions that might affect loading on train runs, and explained how it often occurs that a train may start out of a terminal with light loading and be required to pick up at local stations along the line until it gets its maximum load. He also testified that in addition to the responsibility of the general superintendent the company provides a superintendent of locomotive efficiency, who is in direct charge of that particular feature and has an assistant on each division called "Assistant Superintendent of Locomotive Efficiency." It is the duty of these officials to fit the engines to the work that is required of them and to get the greatest efficiency possible out of the engines. They are held responsible for producing the most favorable results, and are required to show their performance, and if it is not 100 per cent., to explain why not. Their reports and explanations are followed up and if they are not reasonable, the officer is held responsible.

Referring to passenger service, he testified that the officials of the company usually assigned passenger en-

gines with reserve power to meet conditions that may arise, as it would not do to put an engine on a passenger train that ordinarily would have to work to its maximum, because if the engine was called on to handle an extra car, or adverse weather conditions should arise, it might not be able to handle the train satisfactorily on time. That the number of cars in passenger trains vary in accordance with the exigencies of the service. That the weight of the engine reflects its tractive power; that the size of the engines on the St. Louis & San Francisco Railroad were conditioned to the weight and speed of the trains they were expected to pull, both in freight and passenger service, in the interest of economy, for if we put an engine on a train with more tractive power than is necessary it is a waste of power, and therefore money, and so in the interest of economy we try to apply what power is necessary, and not to apply any more than is absolutely necessary to take care of the requirements. (805-23)

The only evidence given by defendants in opposition to the locomotive ton miles, is that of L. S. Mayer, who testified as a purported expert.

Through Mr. Mayer, there was introduced an exhibit marked "CC" which was compiled from the company's train loading records, by which it was endeavored to show that the engine ton mile was not a proper factor for dividing line maintenance of way expenses between freight and passenger, because the freight engines did not, in the period represented by his exhibit, pull 100 per cent. of their time card theoretical maximum drag rate tonnage. All of Mr. Mayer's comparisons of engine ratings are made solely on the basis of the tonnage behind the engine. These comparisons wholly disregard (1) speed, weather, traffic and other service con-

ditions, all important and frequently controlling; (2) that the locomotive potential rating is based on its pulling power at drag speed, while the average mileage movement per hour is frequently double the drag movement, and often from 3 to 5 times the speed of the drag movement. According to Mr. Symons' undisputed evidence (798-9) an increase in the speed is accompanied by a reduction in tractive power. We quote from Mr. Symons in explanation of his Exhibit No. 54 as follows:

> "Starting at a speed of 5 miles per hour the engine had a net tractive power of about 23,000 pounds.
>
> At 20 miles per hour, the engine had a net tractive power of about 18,500 pounds.
>
> At 30 miles per hour the engine had a net tractive power of about 15,000 pounds.
>
> At 40 miles per hour the engine had a net tractive power of 11,000 pounds, and at 60 miles per hour the engine had a net tractive power of about 5,900 pounds, although the potentiality of the engine was not necessarily affected." (798)

This is followed by an explanation of the factors of weather and service conditions, which further reduce the tractive power of the engines in actual service. (799-801)

Mr. Mayer's want of experience was such that he had no knowledge of the effect of traffic conditions, or of the manner in which speed affects the tractive power and performance of an engine. He did not even know what the term "tractive power" means (647-8); nor what constituted a ruling grade, or its effect on engine rating (652); nor anything of the speed at which an engine was expected to haul a load at the rating indicated in the time card. (653) Mr. Mayer also admitted he had no knowledge of civil or mechanical engineering and had never occupied an administrative, supervisory or executive position in the railway service.

It is evident that Mr. Mayer's attempt to measure the efficiency and service of a locomotive by the single standard of the weight behind the engine, without regard to engine rating, speed, weather service or other traffic conditions is meaningless. The importance, and frequently controlling effect of these conditions is fully explained by Mr. Frates, General Superintendent of the plaintiff railway. (805-23) We direct attention to the trial court's comments as to the witness Mayer, and his qualification to speak in reference to the matters with which he dealt. (917)

COMPARISON OF RESULTS OBTAINED BY USE OF LOCOMOTIVE TON MILE WITH THOSE OBTAINED BY USE OF EQUIVALENT TON MILE BASIS, RECOMMENDED BY THE COMMITTEE ON ECONOMICS OF RAILWAY LOCATION OF AMERICAN RAILWAY ENGINEERING ASSOCIATION.

It is a matter of public knowledge that the membership of the American Railway Engineering Association is composed of the leading engineers of the country having to do with or interested in railway location, maintenance, etc. While on the witness stand, Mr. Mayer, for the defendants, attached much importance to a supposed report of the Committee on Economics of Railway Location of this Association. But it developed that what he treated as the report of the committee was merely a dissent of an individual member of the association to the report of the committee on the subject. (672-3)

It appears from page 705 of the record, and also from Volume 14, page 579, of the American Railway Engineering Association Reports that the Committee on Economics of Railway Location consists of 12 members, the name of each

member of the committee, and his business connection, appears at page 705 of the record. It will be observed that about one-half of the members of this committee are engineers directly connected with the operation of important railway lines, and that the others are independent, consulting or contracting engineers. The impartial judgment of this committee, qualified by education and experience to speak authoritatively, is well worthy of the consideration of this court. That committee recommended as a proper factor for the apportionment of maintenance of way expenses between freight and passenger service the equivalent ton mile.

Mr. Mayer read into the record the material part of this report, some of which appears at pages 706-7, and the remainder at pages 709-10 of the record. The part of this report read into the record is as follows:

> "In studying average maintenance expenses by divisions for a period of years on the large system previously mentioned it appeared that the best unit of traffic measurement of expense was what we will term the equivalent ton mile. The total equivalent ton miles would be the sum of the following:
>
> Double the freight locomotive mileage times average weight per locomotive.
>
> Four times the passenger locomotive mileage times average weight.
>
> Total freight ton miles (cars and contents).
>
> Double the passenger ton miles (cars and contents).
>
> This unit considers that one ton of passenger car does double the injury of one ton of freight car, and that one ton of locomotive affects the track as much as two tons of the train back of the locomotive. This unit of measurement even best fits the increase of maintenance of buildings due to increase of traffic and consequent increase in number and size of buildings. Passenger traffic demands a higher type and better grade of maintenance than freight, and even a better type of shop buildings for repair.

With the exception of account 4, Rails, there is a minimum expense for the accounts affected by volume of traffic due to depreciation and decay. This expense must be met to keep the road in shape for operation. The increase in expense above this minimum is practically directly proportional to the equivalent ton mileage passing over the tracks. There may be slight loss of rails by corrosion, but its effect on the general account cannot be noticed and the cost can safely be considered directly proportional to the equivalent ton mileage." (706-707)

The remainder of this report, which was read into the record at pages 709 and 710 is as follows:

"One ton of passenger train does more damage to track than one ton of freight train and the locomotive creates more disturbance than an equal weight of cars and contents. Until data is available to correctly estimate the relative damage, it is recommended that the following ratio be used in estimating effect of traffic on the accounts in Group (a):

One ton of passenger car and contents produces approximately the effect of two tons of freight car and contents. One ton of locomotive produces approximately the effect of two tons of the balance of its train.

The total ton mileage reduced to terms of ton miles of freight car and contents is termed the equivalent ton mileage. * * *

Most of the accounts in Group (a) have a constant maintenance expense due to age and decay plus an additional expense depending on volume of traffic. This additional expense per mile of main track varies most directly with the equivalent ton mile. The equivalent ton mileage can be approximated by adding together the following:

Net freight ton mileage.

Double the freight locomotive mileage times average weight in tons.

Freight train car mileage times the average weight of empty cars (at present about 18 tons).

Double the passenger train car mileage times the

average weight of car and contents (at present about 44 tons).

Four times the passenger engine mileage times the average weight in tons."

In order that the court may have the benefit of a comparison of the results computed on the equivalent ton mile basis, as recommended by the committee with the results shown under the locomotive ton mile basis in the apportionment of maintenance of way expenses between the freight and passenger service, we have had computed from pages 1 and 2 of Exhibit 6 the freight and passenger equivalent ton miles. The computation is a simple one and not subject to controversy. The locomotive ton miles are first deducted from the total gross ton miles in the freight and passenger service, leaving as to the freight service the gross ton miles of freight cars and contents, and as to the passenger service the estimated gross ton miles of cars and contents. To these factors we have applied the multiples recommended by the committee, with the following results:

The freight equivalent ton miles computed on the basis recommended by the committee are 174,610,090, and the passenger, 184,481,798,—the freight percentage of the equivalent ton miles being 48.6 per cent. and the passenger 51.4 per cent., whereas the percentage assigned to the freight on the locomotive ton mile basis is 50.18 per cent., and to passenger 49.81 per cent.

It will be observed that the equivalent ton mile basis assigns 1.59 per cent. more of the maintenance of way and structure expenses to passenger than does the locomotive ton mile basis, and 1.59 per cent. less to freight than does the locomotive ton mile basis. It is particularly noteworthy in this connection, inasmuch as it is claimed by defendants that the engine ton mile basis overcharges the passenger, that the equivalent ton mile

recommended by the select committee of the great national organization of engineers, having to do with the maintenance of railroad properties, operates to charge 1.59 per cent. more of maintenance expenses to passenger than does the engine ton mile basis.

It is but fair to the court to say that upon the objection of certain members of the Association final action upon the report of the committee was postponed for future consideration.

Engine Ton Mile Results Compared With Revenue Train Mile Results.

Some light may be thrown upon the reasonableness of the apportionment of line maintenance of way expenses between freight and passenger by comparing the results obtained by use of the engine ton mile with those used or approved in other cases. It is in evidence in this case that the revenue train mile had, prior to the trial of this case, been used for the apportionment of line maintenance of way expenses on the theory that the extra speed of passenger trains compensated in the use made of the track for the extra weight of freight trains. (109)

This basis seems to have been generally and continuously used by the railroad companies of the United States for many years for operating purposes and long before its used in rate litigation. *Trust Company of America* v. *Chicago, P. & St. L. Ry. Co.*, 199 Fed., 593, 596 and 610. On the authority of Judge Hill's brief in the first Arkansas Rate case, page 81, the revenue train mile was the basis used by the Union Pacific Railway Company in the apportionment of maintenance of way expenses in the case of *Smyth* v. *Ames*, 169 U. S., 466. The apportionment, therefore, on the revenue train mile

basis was found sufficient to warrant the granting of an injunction by the trial court and its affirmance by this court. The revenue train mile was used in the first Arkansas Rate case by the carriers and accepted and used by the State; *Allen et al.* v. *St. L. I. M. & S. Ry. Co.*, 230 U. S., 553. It was also used by the carriers in the Missouri Rate cases and accepted and applied by the State without criticism; 230 U. S., 474. It was again used in the Minnesota Rate case, controverted by the defendants and passed without criticism by this court; 230 U. S., 342. In the case of *Buell* v. *C. M. & St. P. Ry. Co.*, 1 W. R. C. R., 426, the Wisconsin Commission, after the most exhaustive investigation ever made by any official body into the apportionment of expenses between freight and passenger, uses the following language with reference to the revenue train mile basis of apportionment of maintenance of way expenses as between the two classes of service:

> "For these reasons it was concluded that the cost of the maintenance of way which depends upon the traffic should be apportioned between passenger and freight on the basis of the revenue train mileage, including switching mileage on some basis in the freight train mileage; and that the portion of these expenses which do not depend upon the traffic should be apportioned either in proportion to the direct operating expenses or in proportion to the respective gross earnings."

The Wisconsin Commission was measuring by one factor both line and terminal maintenance expense, the straight train mileage representing the line proportion and the switching mileage the terminal proportion, while in the case at bar the terminal tracks are set aside and apportioned on terminal units.

Perhaps the most terse and concise statement of the reason for the use of the revenue train mile basis for

the apportionment of maintenance of way expenses available is found in the evidence of Mr. Ludlam, the State's expert, in the first Arkansas case (187 Fed., 290; 230 U. S., 553), at page 2276 of the Iron Mountain record. We adopt and present his statement for the consideration of the court in this case. His statement is as follows:

> "In the case of the maintenance of way expenses they should be distributed, in my judgment, both the proportion which is direct and the proportion which is indirect—which has been referred to as being from 75 per cent. to 90 per cent. *against the use which is made of the maintenance of way, and the use which is made of maintenance of way is to run trains.* If it is true that only 10 or 25 per cent. of the maintenance of way expenses apply specifically to the operation of the trains over the track, then that 10 or 25 per cent., if it could be determined, should be apportioned specifically against those trains that cause the damage, and the remainder of the maintenance of way expense—which would be the indirect expense of maintenance of way—should be apportioned over the direct expenses of maintenance of way." (Italics ours.)

The engine ton mile basis assigns, for the test period, 50.19 per cent. of the maintenance of way expenses to freight and 49.81 per cent. to passenger, whereas the revenue train mile basis would have assigned 49.37 per cent. to freight and 50.63 per cent. to passenger. (Exhibit 6, pp. 2-3.)

The contention of the defendants is that the locomotive ton mile basis overcharges the passenger. It will be observed that it charges slightly less of the maintenance of way expenses to passenger than does the revenue train mile basis.

COMPARISON OF RESULTS UNDER THE LOCOMOTIVE TON MILE BASIS AND THE LOCOMOTIVE MILE BASIS FOR THE APPORTIONMENT OF LINE MAINTENANCE OF WAY EXPENSES BETWEEN FREIGHT AND PASSENGER.

In view of what was said by this court with reference to the apportionment of maintenance of way expenses on the road locomotive mile basis in the case of *Norfolk & Western Ry. Co.* v. *Conley*, 236 U. S., 605, 610, it will be of interest to compare the locomotive ton mile percentages with the engine mile percentages.

The locomotive ton mile percentages used for the test period assign 50.19 per cent. of the maintenance of way expenses to freight and 49.81 per cent. to passenger (Ex. 6, p. 2); while the road locomotive mile basis would assign 49.90 per cent. to freight and 50.10 per cent. to passenger,—the result being that the road locomotive mile basis would assign about one-third of one per cent. more of the maintenance of way expenses to the passenger service than does the engine ton mile basis. (Ex. 6, p. 3.)

With respect to the use of the locomotive mile basis for the apportionment of common maintenance expenses, this court in the Norfolk & Western case, *supra*, used the following language (236 U. S., 605, 610):

> "With respect to the operating expenses, it was said that for many years accounts had been kept for the purpose of separating the expenses incident to the freight and passenger traffic, respectively; that about 65 per cent. of these expenses could be directly assigned, and that the remaining 35 per cent., consisting of items common to both sorts of transportation, were divided between the passenger and freight traffic on the basis of engine miles,—this being deemed to be more equitable than the train mile basis originally used, inasmuch as most of the freight was hauled by two engines."

It is submitted that while the locomotive mile may be a more equitable factor than the revenue train mile, because such basis takes into consideration the use of more than one locomotive, the locomotive ton mile is more equitable than either, because it not only takes into account the use of more than one locomotive but also the difference in weight of the locomotive in the freight and passenger service.

Attention is again directed to the fact that the principal complaint of the defendants against the engine ton mile is that it charges more of the maintenance of way expenses to the passenger service than should be charged against that service. It will be observed that it charges less to the passenger service than the basis employed in the Norfolk & Western case, *supra*, and upon which the West Virginia 2c passenger fare law was declared confiscatory by this court, and which basis was deemed more equitable than the revenue train mile basis.

A RESUME OF THE RELATIVE PERCENTAGES OF MAINTENANCE OF WAY EXPENSES ASSIGNABLE TO THE FREIGHT AND PASSENGER TRAFFIC UNDER THE ENGINE TON MILE, REVENUE TRAIN MILE, ROAD LOCOMOTIVE MILE AND EQUIVALENT TON MILE BASES.

We present herewith for comparative purposes a resume of the comparisons heretofore made of the engine ton mile, revenue train mile, road locomotive mile and equivalent ton mile bases for apportionment of maintenance of way expenses between the freight and passenger service:

	Freight	Passenger
Engine ton mile	50.19%	49.81%
Revenue train mile	49.37%	50.63%
Road locomotive mile	49.90%	50.10%
Equivalent ton mile	48.6 %	51.4 %

It will be observed that of the 4 bases considered, all of which have the approval of the highest authority, the locomotive ton mile basis charges the smallest percentage of maintenance of way expenses to the passenger.

In this connection we again call attention to the fact that the chief complaint against the locomotive ton mile made by defendants is that it overcharges the passenger service.

APPORTIONMENT OF MAINTENANCE OF WAY EXPENSES BETWEEN FREIGHT AND PASSENGER ON THE BASIS SUGGESTED IN DEFENDANTS' EXHIBIT DD.

Defendants' Exhibit DD is a tentative study relative to the apportionment of operating expenses between the freight and passenger service, prepared by the statistician of the Interstate Commerce Commission, for consideration and criticism of those interested in such division. A copy of this study was transmitted to Mr. Mayer, who offered the same in evidence as Defendants' Exhibit No. DD. The reason for the division on the revenue train mile basis of that part of the maintenance expense caused by weather stress, as read into the record from the study, by Mr. Mayer, is shown at page 678 of the record, and is as follows:

> "Turning to the weather stress expense, or other expense independent of the traffic wear and tear: This must be distributed on some basis that measures use of track. If passenger trains weighed no more than so much air, and hence caused no damage to track whatever, they should, nevertheless, pay a toll for the use of track, because while on the track they monopolize it for a distance to the front and rear and prevent the use of that track by additional freight trains, if the point of congestion has been reached. Whether the train is long or short, heavy or light, it must have exclusive use of the track for a time. Hence, the train mile rather

than the ton mile or car mile is the best measure of track use."

Mr. Mayer at page 676 of the record estimated that 10 per cent. of the track maintenance expense is made necessary by use, and 90 per cent. by weather stress, He stated that he would divide the 10 per cent. on the gross ton mile basis, but declined to agree that it was possible to find any basis that would correctly apportion the remaining 90 per cent. However, in this connection he read the above quotation into the record.

Mr. Hamilton applied in Exhibit No. 60 (858-9) the basis suggested in Defendants' Exhibit DD, taking the percentages due to use and weather stress respectively, as stated by Mr. Mayer, with the result that it operated to decrease the amount of maintenance charged to freight by $1,253.31, and increase such charge to passenger by the same amount. It will thus be noted that the basis suggested in the Mayer Exhibit DD applied to his estimate of the percentage of maintenance made necessary by the use or wear and weather stress respectively operates to charge slightly more of the maintenance to passenger service and slightly less to the freight service than is charged by the engine ton mile.

ORDERS OF THE INTERSTATE COMMERCE COMMISSION RELATIVE TO THE APPORTIONMENT OF MAINTENANCE OF WAY EXPENSES BETWEEN THE FREIGHT AND PASSENGER SERVICE.

At pages 83 to 86 of the defendants' original brief reference is made to certain language of the Interstate Commerce Commission prescribing rules for the apportionment of expenses between the freight and passenger service, and also to the tentative basis applied in the Western Passenger Fares case, 37 I. C. C., 1. Following these references it is assumed that the Interstate

Commerce Commission has adopted, as an appropriate basis for the apportionment of maintenance of way expenses, the direct charge basis, and has condemned the use of the engine ton mile basis for such purpose.

The quotation from the order of the Commission appearing on page 83 of defendants' original brief is incomplete. Attention is called to the fact that the entire matter is set out in the discussion in the Western Passenger Fares case, 37 I. C. C., 13.

The actual order made by the Commission relative to the apportionment of maintenance of way expenses between the freight and passenger service is as follows:

> "That each said carrier shall maintain a record of its locomotive ton miles made in its transportation service, subdivided with respect to freight train service, mixed train service, passenger train service, and special train service. By the number of locomotive ton miles made by any locomotive is meant the product obtained by multiplying the number of tons (2,000 pounds) in the weight of the locomotive ready for service (but exclusive of tender when the tender is a separate car) into the number of locomotive miles made by it."

It will be observed that the Commission does not require the compiling of estimated gross ton miles (there is no means by which actual passenger gross ton miles can be obtained); nor can a computation be made of gross ton miles from reports regularly made by the carriers to the Commission. The order of the Commission requiring the compilation only of locomotive ton miles is in force to-day, without any apparent intention to modify the same.

This certainly does not indicate that the Interstate Commerce Commission has rejected the locomotive ton mile basis.

An examination of the discussion of the apportionment

of maintenance of way and structure expenses between freight and passenger service appearing at pages 12 to 23, inclusive, of the opinion in the Western Passenger Fares case (37 I. C. C., 1, 12-23) clearly indicates that the Interstate Commerce Commission applied a temporary basis in that case, leaving the matter, so far as the future is concerned, as it is in the order prescribing the basis of apportionment of expenses between the freight and passenger service, that is,—undecided,—and the locomotive ton miles alone to be reported.

Referring to the action of the Interstate Commerce Commission in the Western Passenger Fares case, and its application therein of the direct charge basis, attention is called to the following language (p. 22):

> "Difficult and elusive as is the problem of giving to these elements their proper weights, they are entitled to some consideration. We have, however, some difficulty in accepting the locomotive ton mile method for the reason that while it does to a certain extent give consideration to the speed of the trains as well as to their weight, we are not convinced that this is in *all* respects more certain in its foundation than is the gross ton mile method." (Italics ours.)

It would seem from this language there was some one phase of the locomotive ton mile basis as to which the Commission was not fully convinced.

They further say:

> "These expenses for maintenance of way and structures which apparently cannot be at this time directly allocated as between passenger and freight upon the basis of the costs should be divided between passenger and freight as nearly as possible upon the basis of their respective utilization of this part of the plant. If one could correctly measure and compare the degree of utilization of the track and structures by these two branches of the service this comparison might serve as a basis for the division of these unallocated expenses. What is the best measure that can be obtained of this utiliza-

tion of the track by these respective services? In the absence of any certainty that the scale of passenger fares and that of freight rates is properly proportioned, the revenue derived from the respective services cannot form a fair measure of this utilization. The absence of such a known relation between these charges, however, leads to an examination of certain expenses as probably indicative of the utilization of the track and structures. The fuel consumed by road locomotives *drawing* trains over the road; the lubricants water, and other supplies for these locomotives; the train supplies; the wages of trainmen and enginemen, are all separated between passenger and freight, and each by itself or the aggregate of all will constitute an index of the utilization of the *tracks* by these two branches of the service." (Italics ours.)

Following the statement of the accounts used in this particular case, the following language is used (p. 23):

"The common expenses are divided on this method between the two services in the proportion of the actual division of the seven preceding accounts. *Our decision to use this method in this case must not be regarded as conclusive on our part of the method that should ultimately be used for the division of maintenance of way and structure expenses between passenger and freight. The objections that may be urged against the direct charge method are known and appreciated.* If, for example, a marked increase in wages and trainmen on passenger trains takes place, the result under this method is to increase the amount of unallocated expenses assignable to passenger business, while the actual utilizations of the track and structures by the two branches of the service remain unchanged. *We are using these direct train costs in this instance to determine the apportionment of unallocated expenses between passenger and freight because the objections to this method seem less forceful than those that have been urged against any other methods proposed.*" (Italics ours.)

Considering the terms of the order of the Interstate Commerce Commission requiring the apportionment of

operating expenses between the freight and passenger service, and the opinion of the Commission in the Western Passenger Fares case, we think it may be safely assumed that the so-called direct charge basis was used as a temporary index of the utilization of the track in the two branches of service, for the purpose of the particular case under consideration, and that the Commission in no wise committed itself to the same as a proper basis for use in future cases.

It is also apparent that the principle endeavored to be applied by the Commission is that the cost of fuel consumed by road locomotives in *drawing* trains over the road, in connection with other expenses of train movement, might be temporarily used as an index to the utilization of the tracks by the freight and passenger service. However, the items charged to the freight and passenger service in accounts 80 to 85 and 88 and 89 do not accurately reflect the cost of fuel consumed by road locomotives, in moving trains over the road or the cost of other *train movement expenses* in the freight and passenger services respectively.

On the freight side these charges represent to a large extent the cost of fuel and other train supplies consumed by freight locomotives while waiting for passenger trains, for other freight trains, and while switching on terminal tracks. The same is true with reference to the pay of all freight train employees. If such fuel consumption and pay of train employees can be used as a reasonably accurate index to the utilization of the roadway by trains drawn over the tracks, there must of necessity be deducted from the passenger train expenses a proportion thereof representing non-movement time, and from the freight train expenses (1) a proportion thereof representing non-movement time, which is a much greater proportion of the whole than on the pas-

senger side; (2) a proportion thereof representing the cost of fuel, lubricants and pay of trainmen while the road engine is engaged in terminal switching service; (3) a proportion of this so-called direct expense to represent the services performed by the freight trains for the passenger business over and above that performed by the passenger trains for the freight business.

The evidence discloses that a very substantial part of the time of all road freight locomotive is spent in terminal switching service on freight terminal tracks, the maintenance and value of which in the case at bar has been assigned exclusively to the freight business.

The inclusion on the freight side as expense factors of *drawing locomotives over the road,* of fuel and other locomotive supplies consumed while the freight engine is standing on sidetracks waiting for passenger trains, other frieght trains or while switching in terminal service and of hauling company material, operates to very materially impair the availability of such expenses as an index to the utilization of the tracks by the freight and passenger service.

As a resume, therefore, it is submitted that the so-called direct expenses as used by the Interstate Commerce Commission are unduly swelled on the freight side:

(1) By the fuel consumed by freight engines and by pay of employees of freight trains while standing on sidings waiting for other freight and passenger trains, and while switching on freight terminal tracks.

(2) By the fact that such freight engines and pay of employees of freight trains are in large part expended by the hauling of fuel, lubricants and other supplies for the passenger service, and material for the repair of

roadways, tracks and other structures over which passenger trains are moved.

The evidence in this case unquestionably discloses that the service performed by the freight trains for the passenger traffic is much greater than that performed by the passenger trains for the freight traffic, and the direct charge costs could not be properly reflective without an adjustment of the service performed by the freight and passenger trains respectively for the passenger and freight service respectively. This is recognized in the order of the Commission requiring the separation of expenses between the freight and passenger service by the following language:

> "Carriers should indicate the total amount of credit which should be given to the freight service for work (such as carrying company fuel) performed for the passenger service and vice versa."

The Commission says with reference to the direct charge basis: "The objections are known and appreciated." (37 I. C. C. 1, 23.) Some of the objections were known, but perhaps not fully appreciated. No one having urged the direct charge basis in the Western Passenger Fares case, and no one, therefore, having protested against it, naturally, the Commission's attention was not directed to many of the objections to such basis, with the result that there was mentioned only those which occurred to the writer of the opinion.

It is stated at page 86 of the defendants' original brief: "The Interstate Commerce Commission did not have the data for all of the direct costs, and applied only such as it did have." We agree with counsel that the data used by the Interstate Commerce Commission was incomplete, and have indicated above what we believe it was necessary for the Commission to have in order to get approximately correct results, and feel we have dem-

onstrated that if the Interstate Commerce Commission had available all of the factors the result would have been substantially identical with that obtained by using the locomotive ton mile basis for the apportionment of line maintenance of way expenses between the freight and passenger service.

The incomplete factors used operated to overcharge the freight and undercharge the passenger business.

For these reasons, in our judgment no importance whatever can be attached to the employment by the Commission of the direct charge basis in the Western Passenger Fares case. The defendants are in the position of in one breath saying the factors employed by the Commission are incomplete, and the conclusions meaningless, and in the next of asserting that the basis employed was correct, and represents the mature judgment of the Interstate Commerce Commission in the apportionment of expenses between the freight and passenger service.

The opinion of the Interstate Commerce Commission in the Western Passenger Fares case, *supra,* was announced after the submission of the Arkansas case to the trial court, so that plaintiff had no opportunity to present the results computed upon the basis of the apportionment between freight and passenger tentatively used by the Commission in that case. The impression is endeavored to be conveyed in the defendants' briefs that an entirely different result would have been obtained had the Interstate Commerce Commission direct charge basis been applied. Inasmuch as all of the factors for making this computation are in the record, we have, for the benefit and convenience of this court, computed what the result would be if a substitution were made of the direct charge basis for the locomotive ton mile basis in the apportionment of line maintenance of way expenses between the freight and passenger service. That is to say,

in making the computation, we have used, instead of the locomotive ton mile percentages for the test period, the direct charge percentages, for the test period, chargeable to the freight and passenger service respectively in the accounts used by the Interstate Commerce Commission in the Western Passenger Fares case. Otherwise the process by which the results are arrived at are identical with that employed in the compilation of plaintiff's exhibits showing the net returns from operation as to the state freight and state passenger business.

As a result, we find that the use of the direct charge basis, in lieu of the locomotive ton mile basis, for the apportionment of line maintenance of way expenses, operates to increase the amount of operating expenses assigned to intrastate freight by 0.97 per cent., and to decrease the amount assigned to intrastate passenger by 4.84 per cent. Applying these percentages to the fiscal year 1913, we have the following results:

Intrastate freight expenses as assigned (Exhibit 61)	$218,366.56
Amount of increase by reassignment on direct charge basis	2,118.16
Intrastate passenger expenses as assigned (Exhibit 61)	309,699.69
Amount of decrease as a result of reassignment on direct charge basis	14,989.46

	Freight	Passenger	Total
Balance available as return (Exh. 61, p. 2)	$4,517.64	$35,332.72 (Deficit)	$30,815.08 (Deficit)
Percentage of return (Exh. 61, p. 2)	0.31%	None	None
Increase in intrastate freight and decrease in intrastate passenger and total expenses	2,118.16	-14,989.46	-12,871.30
Balance available as return with maintenance of way expenses apportioned on basis of accounts 80 to 89 (omitting account 81)	2,399.48	20,343.26 (Deficit)	17,943.78 (Deficit)
Percentage of return	0.17%	None	None

It will thus be observed that for the fiscal year ending June 30, 1913, applying the direct charge basis, there is a return from the intrastate freight business of 0.17 per cent.; a deficit as to the intrastate passenger business of $20,343.26, and a deficit on the combined freight and

passenger intrastate business of $17,943.78. The return of 0.17 per cent. shown for the intrastate freight is computed upon the value of the property assigned to the freight service on the transportation expense basis. If the assignment had been made on the direct charge basis the percentage would have been about 0.15 per cent. greater as to the freight and about 0.15 per cent. less as to the passenger. It will be noted that there is an operating deficit of $20,343.26 as to the passenger side.

The year ending June 30, 1913, fully demonstrates the result of the application of the direct charge basis, and it is not necessary to carry the same into the statistics for the other years involved.

Apportionment of Equipment Repairs Between Line and Terminal Service.

The apportionments of maintenance of equipment expenses between the line and terminal service, as carried in the plaintiff's original exhibits are (except as to freight locomotives, which were considered on the time basis) computed on an average of the judgments of the general managers of the principal western roads. Prior to the trial of the case, however, the plaintiff employed Mr. W. E. Symons, a consulting mechanical engineer of long experience, to make a careful investigation and study of the causes which make necessary expenditures for the maintenance of equipment in the line and terminal service respectively.

Mr. Symons is a mechanical engineer of national reputation having large experience in designing, constructing and maintaining locomotives and cars. His skill and judgment in these matters is sought by railway officials throughout the entire country. A resume of his experience appears at pages 465 to 468 of the record. Mr.

Symons has no railway connection but maintains an office in Chicago as a consulting mechanical engineer, and is employed as an expert by the railroads in every section of the country, in the designing, construction and maintenance of locomotives and cars. He was, therefore, well qualified to speak on the subject matter involved. Mr. Symons made a careful independent investigation of the matters involved, and as a result thereof found the following percentages of maintenance expenses of locomotives and cars were made necessary in the line and terminal service respectively (466-88):

	Line	Terminal
Freight locomotives	66. %	34. %
Passenger locomotives	70. %	30. %
Freight cars	35. %	65. %
Passenger cars	82.5%	17.5%

Mr. Symons' evidence explaining his method of apportionment, his reasons therefor, and the percentages obtained appear at pages 466 to 484, inclusive, of the printed record.

It will be observed that these percentages differ somewhat from those based upon the average of the opinions of the general managers (except freight locomotives which were on time basis), which are shown on page 1, Exhibit 51, to be as follows:

	Line	Terminal
Freight locomotives	75.08%	24.92%
Passenger locomotives	64.94%	35.06%
Freight cars	36.03%	63.97%
Passenger cars	64.94%	35.06%

The effect of applying the Symons percentages to locomotives and car repair expenses of the railway company in Arkansas in each of the periods covered by the exhibits is set out in sheet 2 of Exhibit 51, from which it appears that the net increase or decrease in intrastate expenses is not in any of the periods of sufficient importance to make a perceptible change in the figures shown in Exhibits 22, 24, 25, 26, 27-A and 61. In each of

the years there was a small decrease in the intrastate passenger operating expenses, with almost an identical corresponding increase in the intrastate freight operating expenses, the net result of the application of the Symons percentages being to reduce in some instances and increase in other instances the total operating expenses charged to the state business in the several years involved as follows:

Year ending June 30, 1913 (Decrease)	$731.10
Year ending June 30, 1912 (Decrease)	20.39
Year ending June 30, 1911 (Increase)	354.73
Year ending June 30, 1910 (Decrease)	344.60
Four months ending Dec. 31, 1907 (Increase)	46.01

This apportionment is the only question in the case that depends upon expert judgment. The extent of maintenance made necessary in the line and terminal service respectively cannot be arrived at by any direct mathematical computation. It must be, and therefore, has been adjusted upon the basis of judgment and experience. This was recognized by the defendants in their effort through Mr. Simson to make a purported apportionment upon the basis of the supposed experience and impression of someone else.

Mr. Simson for the defendants made an apportionment of equipment expenses between the line and terminal service by attempting to adjust to the line and terminal basis the contributing causes for maintenance of equipment as stated by Mr. Berry at page 695 of the Report of the Proceedings of the Fifth Annual Convention of the American Railway Engineering and Maintenance of Way Association, held in March, 1904. The line and terminal percentages arrived at by Mr. Simson in his attempted application of the Berry tables are as follows:

	Line	Terminal
Freight and passenger locomotives	58.48%	41.52%
Passenger cars	63.88%	36.12%
Freight and work cars	61.72%	38.28%

(607-9; Deft. Ex. F.)

By comparison, it will be observed that Mr. Simson assigned 41.52 per cent. of the freight locomotive maintenance to terminal and Mr. Symons assigned 34 per cent. to terminal; that Mr. Simson assigned 41.52 per cent. of the passenger locomotive repairs to terminal and Mr. Symons assigned 30 per cent. to terminal; that Mr. Simson assigned 36.12 per cent. of the passenger car repairs to terminal, and Mr. Symons assigned 17.5 per cent. to terminal; that Mr. Simson assigned 38.28 per cent. of the freight car repairs to terminal and Mr. Symons assigned 65 per cent. *It will be observed that in every instance except that of freight cars Mr. Simson assigned a much greater percentage of such maintenance expense to terminal than did Mr. Symons.* Mr. Symons is an acknowledged master of the subject, while Mr. Simson frankly testified that he had no knowledge that would qualify him to deal with the matters involved. (606-7)

The trial court's finding in this matter is so clear, explicit, complete and convincing that we submit the same in lieu of any comment upon the subject. We quote from pages 920 to 923 of the records as follows:

> "The formula for the maintenance and cost of equipment is found on page 9-a and 9-b of Exhibit 1 of the Company. This has also been severely criticized by the State. The witnesses introduced by the company testified to the correctness of this formula. In addition to the Company's own employees it introduced Mr. W. E. Symons, whom the testimony shows to be a mechanical engineer of great experience and high reputation in connection with that branch of the railway service, not only in operating but designing cars and locomotives. The high standing of Mr. Symons is evidenced by the fact that in some few matters he criticized the formula prepared by the railroad managers, which was used as the basis of the Company's exhibits, and thereupon changes were made by them in accordance with his suggestions. For the last few years he has retired

from active railroad service and acts as consulting engineer. He also acts frequently as arbitrator in cases of damages growing out of injuries to freight cars and locomotives on different lines. The confidence reposed in him is shown by his employment as consulting engineer by the leading roads of the country, to aid them in improving their equipment owing to his knowledge and experience from the thorough and minute investigations made by him of causes and results. Among his employments was that of securing information with respect to the actual expense of repairing locomotives, freight and passenger cars. It was claimed by Mr. Simson, who is an expert accountant, and stands high in his profession, that the bases adopted by the Company are wrong, and those found in an article by Mr. Berry should be adopted. Mr. Symons testified that in his opinion 80 per cent. of the expense of repairing freight cars is due to rough treatment, and only 20 per cent. to the use of the car under normal conditions as to use; that after allocating or subdividing each expense item between line and terminal, the result was the allocation of 75.7 per cent. to terminal and 24.3 per cent. to line; but having in mind certain damages done to cars in line work which he estimated at 10 per cent. he deducted that from the terminal, and added it to line, making the final figures 65 per cent. to terminal and 35 to line. He files as an exhibit a summary of division of freight car repairs between the line and terminal, based on an investigation of four lines, the Santa Fe, Rock Island, the M. K. & T. and this road, as confirming his conclusions. He also files as exhibits photographs of damaged cars, showing the damage done by rough treatment and another exhibit showing how he subdivided the different parts of a car in making his investigations. Repairs to freight cars he assigns 35 per cent. to line and 65 per cent. to terminal. Repairs to passenger coaches he assigns 82.5 per cent. to line service and 17.5 per cent. to terminal. Locomotive repairs he assigns to local freight engines 60 per cent. to line and 40 per cent. to terminal; to through freight engines 68.4 per cent. to line and 31.6 per cent. to terminal; to local passenger engines 64 per

cent. to line and 36 per cent. to terminal; through passenger engines 71 per cent. to line and 29 per cent. to terminal. Typical passenger trains 82.5 per cent. to line and 17.5 per cent. to terminal, including through and local trains.

In his testimony he stated in detail how his investigations were made, and his reasons for each subdivision. He filed itemized statements of the different parts of each item which he considered, and the reasons for his conclusions. The higher cost charged by him to terminal for locomotives than for cars he explained to be due to the fact that 'the entire engine performs more work entering and leaving terminals than any other unit in the train, the application of the brakes being more destructive to the engine.' On the part of the State, Mr. Simson, who frankly admitted that he is only an accountant, with no knowledge or experience of any kind in the management of operation of railroads, prepared his statements of these costs from the tables used by Mr. Berry in a paper prepared by him and read at a meeting of the American Railway Engineer and Maintenance of Way Association held in 1904 on the subject of 'Reduction of Gradient and Elimination of distance curvature and rise and fall on the Union Pacific Railroad.' Mr. Berry is very eminent in his profession as a civil engineer engaged in constructive work, but as he admits that he did not possess the necessary knowledge as a mechanical engineer, he adopted the tables prepared by Mr. A. M. Wellington and Professor Webb (of neither of whom Mr. Simson had ever heard) affecting operating expenses, and from these tables Mr. Simson assigns:

	Line	Terminal
For engine repairs	58.48%	41.52%
Passenger cars	63.88%	36.12%
Freight cars	61.72%	38.28%

In making these figures Mr. Simson does not express any opinion as to whether the tables he used were correct or not, as he admits his lack of knowledge to form such an opinion. He finds that the Company's method is 24.5 per cent. in excess of terminal and a similar per cent. too little for line expense. The tables used by Mr. Berry did not make any di-

vision between line and terminal, but Mr. Simson, taking the different items, allocated them between line and terminal as he assumed they should be, although he admits that he knew nothing of this matter. In his testimony he states:

'I found nothing in Mr. Berry's tables to guide me in making a line and terminal division in any of his subdivisions of cost of repairs. Mr. Berry had no line or terminal division in mind in his paper.'

Coming back to Mr. Wellington's tables, Mr. Simson (Symons) testified that 'these tables were first published in 1877; that the data for them was secured from the Atlantic and Great Western Railway, which was first a broad gauge railroad and then was changed to standard gauge; that the freight cars then used were flimsy as compared with those of the present day and cost about five hundred dollars. The equipment then in use (freight cars, locomotives and coaches) has no application whatever to present day conditions.' He further says: 'An illustration: Mr. Wellington assigns a certain percentage of contributing causes to make up and starting out trains. It was customary in those times for an engineer and fireman to get up in the morning and build a fire in the locomotive and while steam was raising they would get their breakfast; then they came back and switched out their trains, and after they had switched a long time they took their train and proceeded over the road. There are no such conditions nowadays at all. There were very few yards in those days except the yards that were used by trains when they came in at the end of the run. Mr. Wellington's tables were based upon conditions that have so completely changed, both with reference to railway operation and with respect to the character of equipment and the business of handling it, that it would not be applicable at all, although the fundamental principles are good, and Mr. Wellington was one of the brainiest and ablest railway men the country ever produced. His book has a front place in my library and I prize it highly; his tables on equipment however are completely out of date. That road is now a part of the Erie Railway. In making an examination of the equipment and facilities for its maintenance of

the Erie Railway in 1907, it was necessary for me to personally inspect every car, or some of each series of cars, on hand; among the cars carried on the Company's schedule of equipment were some of those old 25 ton box cars, originally the property of the Atlantic and Great Western. They were being used for boarding and camp cars. I recommended that they scrap all of them and write them off the books. They were good cars in their day, but there is no such equipment used now, and a distribution of contributing causes of repairs to equipment based upon cars or locomotives of that type, and upon conditions of that period is not a good rule to attempt to copy now. Another very important feature was that in those times all cars had what was called a link and pin coupler, making it necessary for the brakeman to go between the cars to where he made the coupling and they were handled very carefully compared to what they are now. Since the automatic coupler has come into use, and it is unnecessary for trainmen to go between the cars, the destructive effect of such has gone up enormously. It did not obtain in those days. If it had the cars would not have been there for me to have seen them in 1907.'

In view of Mr. Simson's testimony that the Wellington tables used by Mr. Berry furnished no data for making the division between line and terminal, and that he had no practical knowledge whatever on that subject; the further fact that conditions have so materially changed since Mr. Wellington prepared his tables that they are inapplicable to present day rolling stock of railways, and the testimony of Mr. Symons and that of the other witnesses who testified on that subject, Mr. Simson's calculations on that subject, as shown by his exhibits, are of no value whatever."

The logic of the court's finding is unanswerable. However, if the Simson percentages of maintenance of equipment to line and terminal be substituted in all computations in lieu of those applied in the plaintiff's exhibits, or resulting from the application of the Symons percentages, there is no perceptible difference in the result.

That is to say, notwithstanding the attempt of the defendants at pages 51 to 56 of their original brief and 13 to 16 of their reply brief, to magnify the importance of this apportionment, and its effect upon the final results, the application of any one of the three bases compared with any one of the others, results in no material difference in the percentage of return on the value of the property devoted to either the intrastate freight or the intrastate passenger business.

In order that the court may have for its consideration a comparison of the three bases, we have had made a computation showing under column 1 the result under the basis applied in the plaintiff's several exhibits, and as carried forward to exhibit No. 61; under column 2 the results on the basis of the substitution of the Symons percentages shown in Exhibit No. 51 for those used in Exhibit No. 61; under column 3 the results on the basis of the substitution of the Simson percentages for those originally used by the plaintiff.

The results shown under column 3, on the basis of the Simson percentages, substituted for those originally used by the plaintiff are found by simply substituting the Simson percentages in the various computations for those applied in the plaintiff's original exhibits and carried forward to Exhibit 61.

This computation is printed in detail, for the information of the court as appendix No. 9, and appears at pages [illegible] to [illegible] of this brief.

For the purpose of comparison the basis used in plaintiff's original exhibits will be referred to as the original basis; the results shown under the Symons' percentages will be referred to as the Symons basis; and the results shown by the substitution of the Simson percentages will be referred to as the Simson basis.

Considering the year ending June 30, 1913, which is typical of all of the other years, we find that on the basis of the original assignment there was a balance available for return on the intrastate freight business of $4,517.64, sufficient to yield a return of 0.31 per cent. upon the value of the property devoted to such intrastate freight business. (Exh. 61, p. 2.) On the Symons basis the amount available for return was $1,470.81, sufficient to yield a return of 0.10 per cent.; and on the Simson basis the amount available for return was $19,890.65, sufficient to yield a return of 1.38 per cent.

On the intrastate passenger business, there was a deficit upon the basis of the original percentages of $35,332.72 a deficit on the Symons basis of $31,554.79; and on the Simson basis a deficit of $37,748.38.

On the intrastate freight and passenger business combined the deficit on the original exhibits is $30,815.08; on the Symons basis, $30,083.98, and on the Simson basis a deficit of $17,857.73.

The result of applying the Simson percentages is to increase the net state freight operating income from $4,517.64 to $19,890.65, and the rate of return from 0.31 per cent. to 1.38 per cent., and to increase the intrastate passenger deficit from $35,332.72 to $37,748.38.

The defendants presented to the trial court a basis of apportionment between the line and terminal service which they insisted measured the same with reasonable accuracy, but used such apportionment only for the purpose of reflecting upon the basis presented by the plaintiff, and not to ascertain what the result would be upon their own basis. We have in these computations carried their basis to a final result.

Their contentions in this respect emphasize that their persistent efforts are to create uncertainty and to mag-

nify the importance of relatively unimportant matters. In other words, their efforts are and have been to confuse rather than assist in a solution of the problems involved.

It will be observed that the use of Mr. Simson's percentages in the apportionment of maintenance of equipment expenses between line and terminal results in confiscation as conclusively as does the basis used by the plaintiff, and that as to the passenger business it shows substantially greater confiscation than the basis employed in the original exhibits of plaintiff or by the Symons per cents.

APPORTIONMENT OF DIVISION YARD AND JUNCTION STATION EXPENSES BETWEEN LINE AND TERMINAL, AND STATE AND INTERSTATE TRAFFIC.

Witness Mayer, without any knowledge of the extent of the movement of interstate and intrastate traffic through division points, or from main to branch lines, criticized the method prescribed in the formula for the division of yard expenses betwen state and interstate, and of station expenses at junctions of branch lines with main lines between the line and terminal service. Mr. Mayer insists (571-4) there should be no difference in the treatment of shipments originating on branch lines and passing through a branch line and main line junction point, and a shipment originating on a foreign line and delivered to the St. Louis & San Francisco Railroad at a division point. He assumes that the handling in both instances is a terminal service, and should be apportioned between state and interstate on the terminal units. He loses sight of the principle upon which the formula is based, requiring that division be made with reference to the character of the service, as to whether

it is haulage or non-haulage expense, rather than the accident of similarity of service.

Mr. Mayer had no knowledge whatever of the number of units receiving service in the division yards, or whether the assignment of expenses to state and interstate on the terminal instead of the line units, would charge more or less to the state business. Nor did he know whether the apportionment of expenses of transfers from main to branch lines or from branch lines to main lines on the terminal units would operate to charge more or less to the state business. In the absence of any knowledge on the subject, and with his usual partiality and bias, he assumed that in each instance the basis prescribed by the formula overcharged the state business. This assumption was simply a biased opinion without anything in the record to sustain it. It was endeavored to be sustained as to division yards, as the state haul was relatively shorter, on the assumption that for an equal number of miles hauled the state ton would not receive the same amount of yard division handling.

The assumption that the method of apportionment prescribed by the formula operated to overcharge the state business is exploited in many places in the defendants' original and reply briefs, but particularly at page 51 of the original brief.

To ascertain whether or not Mr. Mayer's surmise had any foundation in fact, Mr. Hamilton applied literally the basis suggested by Mr. Mayer for the apportionment of these expenses to Fayetteville, a typical point, including all of the phases of the matter discussed by Mr. Mayer. It is a town of large size, having a division yard, main line local and through trains, with two branches leaving the main line, one the Ozark & Cherokee Central, running through to Muskogee and beyond, and the other the St. Paul branch, running out to Petti-

grew. Mr. Hamilton reconstructed the division of expenses at Fayetteville on Mr. Mayer's plan, for the test period of November and December, 1913, following his suggestions literally. He divided the freight line expenses between state and interstate on the basis of the gross tons of loaded cars picked up and set out at Fayetteville, instead of the net ton miles, as prescribed by the formula, and of which Mr. Mayer complained. He also distributed the transfer expenses from main to branch lines and from branch lines to main line upon the terminal instead of the line units. The comparative results he found to be as follows:

> "There was charged in our exhibits $592.66 to intrastate freight and $2,205 to interstate freight; whereas, following Mr. Mayer's suggested method I got a charge to intrastate freight of $1,058.51, and to interstate freight $1,739.35." (859-61)

It will be noted that the basis suggested by Mr. Mayer charges about 100 per cent. more to the intrastate business than the basis prescribed by the formula.

This mathematical demonstration of the absurdity of Mr. Mayer's assumptions has not in the least deterred counsel for the defendants from exploiting both directly and indirectly, in season and out of season, the contention in their brief that the state business is overcharged by the methods prescribed by the formula for apportioning division yard expenses between state and interstate traffic, and also by the method of apportionment of expenses at stations where transfers are made from main to branch lines and from branch to main lines.

The finding of the trial court upon this subject is as follows:

> "The criticism of Mr. Mayer of the division of yard and station expenses made by the formula of the company is based on the fact that what is called terminal expense is only a part of it. He says that

'under the formula used, all business passing through the junction from the branch line points is line, and all of the expense going to foreign roads or coming from it is terminal,' thus causing, as he claims, the intrastate traffic to bear not only the expense of its own terminals but those of the interstate.

After Mr. Mayer had testified on that point the accountants for the company made an investigation of the effect upon the results, if Mr. Mayer's plan had been followed. The investigation was made at Fayetteville, Ark., which is on the main line and also the terminus of two branches, and one of the largest stations of the company in Arkansas, with the result that under Mr. Mayer's formula intrastate traffic would have been charged with almost 100 per cent. more than it was under the Company's formula. This evidence is uncontradicted, and the figures charged on the work sheets, which were submitted to the accountants for the State, are conceded to be mathematically correct. The difference between the two contentions is that Mr. Mayer is of the opinion that every division point should be considered as a terminal in the sense of origin or delivery. On the other hand, the contention of the Company is and their calculations are made on that theory, that such terminal service was an incident to the transportation from origin to destination, and had nothing to do with the receipt, handling, storing or delivery of the freight, which constituted terminal expenses.

In the opinion of the court, the formula of the company on that item is correct, that it is a haulage, and not a terminal charge. The error of Mr. Mayer, in the court's opinion, is that he confounds the yard and station expenses with the terminal. In the one instance it is part of the haul, while the latter is that of receiving, storing and delivering." (919-20)

DEFENDANTS' CONTENTION THAT ASSIGNMENT OF OPERATING EXPENSES TO TERMINAL SERVICE UNDER THE FORMULA IS EXCESSIVE WHOLLY WITHOUT MERIT.

(*Defendants' Exhibits A, B, C, D and E.*)

The defendants being unable under the facts to make a direct attack on the apportionment of Arkansas operating expenses between the line and terminal service, evolved a collateral attack thereon, which is set forth on pages 60 to 68 of their original brief, under the heading "The formula is mathematically demonstrated to be wrong." Counsel for defendants there present a quotation from Plaintiff's Exhibit 4, which relates solely to the assignment of interstate revenues to the state, and has not the slightest application to the assignment of expenses to the State of Arkansas or the apportionment thereof between the line and terminal service or freight or passenger. The plaintiff's case is in no wise dependent upon the accuracy of this assumption, as segregation is made between interstate and intrastate revenues and expenses, but *the defendants' entire case rests upon the accuracy of this assumption because no effort is made by the defendants to segregate the cost of conducting the state and interstate business.*

The defendants' collateral attack consists of Exhibits A, B, C, D and E, and the evidence given in support of same. The purpose of these exhibits is to demonstrate that an excessive cost per ton handling and per passenger handling has been charged by the plaintiff against the state traffic in the State of Arkansas. The method employed is to apply the Arkansas line and terminal unit costs to the so-called system line and terminal units, and thereby to build up a purported constructive system operating expense charge. The conclusion the defendants draw from this is that the Arkansas operating expenses

as apportioned between line and terminal service in the plaintiff's exhibits are in error, and that the error results in an excessive terminal charge. In arriving at these results the defendants consider a terminal service as being rendered by the St. Louis & San Francisco Railroad to every ton of freight which crosses the Red River either north or southbound, when the evidence unqualifiedly shows that no such service was rendered. The defendants also assume that the apportionment results in assigning too much to terminal and too little to line, simply because it suits their convenience to make this assumption, when in fact there is no reason whatever for making such an assumption.

The cost per ton and per passenger per terminal so arrived at by the defendants in their Exhibit A is subsequently applied by them in the calculations set forth in their Exhibits B, C, D and E, which may be briefly explained as follows:

In these exhibits there has been applied by the defendants to the number of tons and passengers handled upon the entire St. Louis & San Francisco Railroad in seven state, covering a mileage of over 4,700 miles, the cost per ton and per passenger per terminal, and to the ton miles and passenger miles of the entire line, the cost per ton mile and per passenger mile for line service, of the railroad in Arkansas, as developed by the defendants in Exhibit A, based upon the plaintiff's showing of total line and terminal costs, respectively, within the State of Arkansas alone. The resultant figures set forth in Exhibits B, C, D and E, the product of applying Arkansas terminal costs and line costs to the tons, passengers, ton miles and passenger miles, handled on the whole railroad, is a hypothetical cost or total operating expense upon the entire railroad, which, as these four exhibits show, is in excess of the actual operating expenses in-

curred by the entire railroad in the periods covered by the exhibits. The theory upon which the defendants made these calculations, and produced these hypothetical results, was that the cost per ton and per passenger and per ton mile and per passenger mile for terminal and line service, respectively, was no greater in Arkansas than upon the railroad as a whole.

Mr. Simson testified that the figures developed in Exhibits A, B, C, D and E, indicate that the plaintiff's division of expenses between line and terminal is not correct, and that the formula is unsound; and, it is broadly asserted at page 60 in defendants' original brief, that the formula is mathematically demonstrated by these exhibits to be wrong. This is their principal and most confident ground of attack upon the formula. The contention is not only untrue—it is contrary to, and inconsistent with, all the evidence as to the manner in which the terminal expense is first made up and subsequently divided among the traffic units (intrastate and interstate passengers and tons), and the conditions of freight and passenger traffic in Arkansas as compared with the system, as to density and the length of haul.

Terminal expense embraces the cost of every character incurred in originating or terminating, receiving or delivering, traffic—freight or passenger—at the beginning and end of their haul or journey on the rails of a given carrier. It embraces, not only the proportion of wages of station, yard and train employees, properly chargeable to terminal service and the proper proportion of the cost of material and supplies and incidental expenses that go hand in hand with the activities of such employees, but also the maintenance of tracks, buildings, equipment and other facilities (or the proper proportion thereof) devoted thereto, as well as the re-

lated proportion of overhead, supervisory and general expenses. (865)

The terminal expense was not determined on the basis of tons and passengers handled; that is to say, these traffic units were not in any way used as factors in the assignment of expenses to terminal service. On the contrary, the assignment of expenses to terminal service was based upon the time of employees devoted to that character of service, with the use of the facilities of every kind proportioned directly to the activities of such employees, as indicated by the employment of their time, regardless of the number of tons or passengers handled. Wherever the entire time of an employee, or the entire use of a facility was devoted to terminal service, all of such employee's time and all of the maintenance of such facility was charged to terminal service. Wherever the time of an employee, or the use of a facility was devoted to both line and terminal service, a portion was assigned to terminal service which bore an exact relation to the time devoted to that service. It should be apparent to any one that, under the formula filed as Exhibit 1, and upon which the plaintiff's exhibits are entirely based, it would be impossible to assign any expenses as between line and terminal by using traffic units as factors for such division. This for the reason that line or haulage expense must necessarily be incurred in connection with the movement of traffic between terminals, which involves the element of distance, which element can only be expressed in the unit of *tons one mile or passengers one mile.* Tons and tons one mile cannot be used as common factors to divide an expense incurred on account of the freight traffic, between terminal and line, nor the passengers and passengers one mile be used as a common factor to divide passenger expenses between terminal and line. It is entirely

practicable, however, to determine the amount of time devoted by employees and the amount of time during which facilities are used, in handling freight in terminal service and passengers in terminal service, and freight in line service and passengers in line service, and it is upon this basis of the time use of the property that the terminal expenses in the plaintiff's exhibits were arrived at.

However, each item of expense which was definitely and explicitly line or terminal, was directly assigned to these respective services in accordance with the facts, and only the items of expense incurred jointly for line and terminal service were apportioned on the basis of time devoted to each. This is explained and illustrated in Exhibit No. 2, and the forms contained in Exhibits 2-A to 2-K. Upon these forms, station agents, foremen of switch crews, section foremen in charge of track maintenance, conductors, special clerks placed in yards and upon trains for the purpose of collecting and reporting information, made daily reports during the test period, showing how much time in all of these classes of service was deovted to terminal work and to what extent facilities were used in that service, such as tracks, buildings, equipment, etc. These reports covered also the terminal work done by road trains. These reports were collected and verified, and the total terminal expense on the railroad in the State of Arkansas was determined, by charging thereto the wages of employees and the cost of materials and supplies used by them, in proportion to the time devoted by the employees to terminal work or the use made of the facilities, buildings, etc., in that service. Now, when the terminal expense had been ascertained, in the manner described, for freight and passenger service separately, then the ton units and passenger units came into play and were used, when prop-

erly classified between intrastate and interstate, as factors to divide the freight terminal expense and the passenger terminal expense between intrastate and interstate freight and passenger traffic respectively.

The separate freight and passenger intrastate and interstate terminal costs, in Arkansas, appearing in the plaintiff's exhibits, were ascertained in careful and minute detail in the manner herein described. The defendants do not question the accuracy with which these terminal costs were arrived at upon the bases described. They do, however, claim that the bases and methods used by the plaintiff in determining these terminal costs were not proper ones. They do not attack them directly, but only indirectly attempt to show that these bases are erroneous. This is the sole purpose of their Exhibits A, B, C, D and E, wherein they attempt to show that, because when the Arkansas terminal costs are applied to the tons and passengers handled upon the entire railroad in six other states in addition to Arkansas, and the Arkansas line costs determined by the plaintiff are similarly applied to the ton miles and passenger miles of the entire railroad, the constructive result produced is more than the total actual operating expenses of the entire railroad. The contention of the plaintiff is that their allocation of expenses to terminal service and line service in Arkansas has been made upon sound and proper bases and is correct, and that the underlying reason for the result produced in the Defendants' Exhibits A, B, C, D and E is that Arkansas terminal costs and line costs per unit of traffic are higher than the average of such costs for the railroad as a whole, and that the reason for this is found in the lighter density of traffic per mile of road in Arkansas and the shorter haul of traffic in that state as compared with the average for the entire railroad. Illustrations are given by Mr. Ham-

ilton in his testimony as to the effect of lesser density and shorter hauls upon the unit cost of handling traffic. In many instances, the cost of maintaining and operating switch engines and maintaining terminal tracks and facilities and many other kind of expenses go on just the same, whether one or ten or fifty tons of freight, or one or ten or fifty passengers are handled. Take, as he says, a one-man station, where one man only is employed. The cost of his employment is the same whether he handles ten tons of freight or fifty tons, and regardless of how the number of passengers handled at such station may vary from day to day. The total cost at a given station or in a given yard may or may not, and often does not, vary in anything like direct proportion to the number of traffic units. The volume of traffic handled at such a station or yard and the cost per unit of traffic depend very largely indeed upon the density of traffic, or the number of tons or number of passengers handled, among which the cost *actually incurred* is to be apportioned.

In this connection, there was offered in evidence, Plaintiff's Exhibit No. 56, which is a statement of the cost per car handled in each of the yards on the entire railroad in the month of September, 1914. This statement, which is compiled by the railroad regularly each month in the conduct of its business, sets forth the actual cost of handling all cars in every yard upon the entire railroad. By dividing into such actual cost, the number of cars handled in each yard, there is ascertained the cost per car handled. In connection with this exhibit, we call attention to the following quotation from Mr. Hamilton's evidence (886), which illustrates the fallacy of the results obtained in Defendants' Exhibits B, C, D and E.

> "Exhibit 56 is our September, 1914, yard cost statement. It shows that on this entire railroad

during that month, we handled 593,329 cars, at an average cost of 23.2 cents per car.

In the yard at Fort Smith we handled 8,254 cars, at an average cost of 38.7 cents per car.

Let Fort Smith typify Arkansas: That average cost at Fort Smith is ascertained by dividing into the actual money spent at Fort Smith the number of cars handled in that yard. If you take that 38.7 cents and multiply the actual number of cars handled on the entire railroad by it, you find a constructive cost of $229,618, whereas, the actual cost as shown in this exhibit was $137,664. But that does not alter the fact that there was that actual cost incurred at Fort Smith. The parallel runs between that and our assignment of terminal cost in Arkansas. That cost was not built up on the number of cars handled at Fort Smith; it was built up on the number of switch engine hours that were worked there, as shown by the cost statement. That is what causes the expenses, not the number of cars we move. The cars were handled, it is true, as a result of working those switch engine hours, but to cut out 25 per cent., perhaps, of the number of cars handled might not have enabled you to reduce one single switch engine hour. That is your destiny of traffic proposition.

Now, let us take another illustration: It is Jonesboro, in Arkansas.

The cost per car at Jonesboro was 35.9 cents. If you apply that to the number of cars handled on the entire railroad you get a constructive cost of $213,005, as against an actual cost of $137,664.

The statement shows that in the month of September, 1914, at Jonesboro, we worked two crews, a day crew and a night crew. We paid those two crews for the services they performed. We had to keep them there to protect that yard, and we incurred an actual cost of $1,804. We handled 5,018 cars. Having to protect that yard with its light traffic density—let us assume the number of cars that came there for handling were diminished about one-half, or cut to 2,500—we could not take away one dollar of that actual expense in the Jonesboro yard, but the cost per car would have been twice as great.

There is the Arkansas situation in our terminal cost versus the entire line.

The costs are not built up in the Jonesboro yard on the number of cars handled any more than our terminal costs in these exhibits are built up on the number of tons handled. The cost is incurred, true, as a result of the tonnage, and the cars in this instance, being handled, but it is not apportioned between line and terminal on the basis of the number of cars or tons. I cannot make it any plainer."

For the year, 1913, the density of freight traffic for the entire railroad in seven States, was 633,906 tons one mile per mile of railroad; in the State of Arkansas, it was 545,927 tons one mile per mile of railroad, the Arkansas density being 20 per cent. less than that of the entire railroad. In the same year, the number of passengers carried one mile per mile of road upon the entire railroad was 97,000, and in Arkansas, 75,000, the Arkansas passenger traffic density being about 30 per cent. less than that of the entire railroad. The evidence shows that on some parts of the railroad, outside of the State of Arkansas, that freight traffic density runs from 2,000,000 to 3,000,000 tons one mile per mile of railroad per annum. The illustrations, made by Mr. Hamilton, show the effect of such a difference in traffic density upon the unit cost, terminal as well as line.

At pages 65 and 66 of defendants' original brief, attention is called to the fact, in discussing their Exhibits A, B, C, D and E, that the traffic density, both freight and passenger in Arkansas, was less than that of the entire line, both in 1913 and 1907. An effort is there made to show that it would be proper to apply Arkansas unit costs to the traffic of the entire railroad and from the results obtained contend that the plaintiff's line and terminal unit costs in Arkansas were wrong, by quoting witness Simson's testimony to the effect that a differ-

ence of 20 or 30 per cent. in the traffic density would have no appreciable effect upon the costs per unit of traffic. In this connection, counsel, at page 65 of defendants' brief, refers to Mr. Simson's statement that wherever the same number of trains are run, the cost of operation of the railroad would be practically the same, regardless of the contents of the trains, in numbers of tons or passengers, and counsel seems to have drawn the erroneous conclusion from this statement of Mr. Simson that the density of traffic has little or no effect upon the cost per unit of traffic. It is obvious that counsel has confused the volume of train service, or, as it might be called, the *density of train service*, with the *density of the traffic hauled upon the trains. By this argument, he admits the truth of the very thing for which the plaintiff contends*, which is that where total operating costs are, in a large measure, fixed, and traffic density or the number of traffic units handled is less upon one part of the railroad than another, a higher cost per unit of traffic actually obtains on that part of the railroad which has the lesser traffic density.

Unconsciously, or through a lack of a clear understanding of the proposition at hand, counsel for defendants has, in reality, by his own argument and his own witness referred to, proven the very thing which he set out to disprove, *i. e.*, that a lesser density of traffic necessarily means a higher cost per unit of traffic.

It would seem to be apparent from Mr. Simson's lack of understanding of this proposition that his evidence (897) as to the effect of relative traffic density in Arkansas upon the cost per unit of traffic in that state, is of no value, or, at best, necessarily rests upon sheer conjecture.

The freight traffic density was 20 per cent. less and

the passenger traffic density 30 per cent. less in Arkansas than on the entire railroad in 1913 (see defendants' original brief, page 65). If the total freight traffic of the entire railroad were reduced 20 per cent. and the total passenger traffic of the entire railroad reduced 30 per cent., the traffic density, freight and passenger, on basis of an average per mile for the entire railroad, would have been exactly similar to the traffic density in Arkansas. It can be mathematically demonstrated that if we reduce the traffic density of the entire railroad to the Arkansas level, and then apply to the traffic of the whole railroad, the Arkansas unit costs developed by the plaintiff in its exhibits, the resultant figures would come within a hair's breadth of the actual operating cost of the entire railroad. This proves conclusively that, considering the actual conditions of traffic density in Arkansas, the Arkansas unit costs developed by the plaintiff are sound and accurate. In order to make this proof, it is only necessary to take the defendants' own exhibits, designed to prove that the plaintiff's Arkansas costs were unsound, and place the entire railroad figures therein, reflecting the volume of traffic, on a parity with the traffic density figures of Arkansas in the same period.

For purposes of this demonstration, we have taken Defendants' Exhibit B and the calculations for the year 1913 set forth therein.

If the total traffic—tons, passengers, tons one mile and passengers one mile—of the entire railroad be reduced 20 per cent. and 30 per cent., freight and passenger, respectively, the traffic density per mile of railroad is automatically reduced 20 per cent. and 30 per cent., respectively, for freight and passenger traffic.

The calculations, based upon Defendants' Exhibit B, for the years 1913 reflected therein, are as follows:

The traffic of the entire line for that year is shown in that exhibit to have been as follows:

Number of tons	18,084,016
Number of tons moved one mile	3,005,714,904
Number of passengers	10,505,911
Number of passengers carried one mile	461,008,235

Reducing this entire line volume of traffic to the Arkansas level—that is to say, the freight units 20 per cent., and the passenger units 30 per cent.—the traffic units of the entire line for the year 1913 would have been:

Number of tons	14,467,212
Number of tons moved one mile	2,404,571,971
Number of passengers	7,354,137
Number of passengers carried one mile	323,125,764

Applying to this volume of traffic, the Plaintiff's Arkansas unit costs, set forth in Defendants' Exhibit B, we have the following calculations:

14,467,212 tons	×72.972 cents=	$10,557,013.94
2,404,571,971 ton miles	× .465 cents=	11,181,259.67
7,354,137 passengers	×17.354 cents=	1,276,236.93
323,125,764 passenger miles	× 1.242 cents=	4,013,221.99
		$27,027,732.53
Add defendants' mail and express costs, as shown in Exhibit B		1,820,778.21
Total		$28,848,510.74

If traffic density of the entire line had been exactly on a par with that of Arkansas, Defendants' Exhibit B for the year 1913, would have shown that the cost of operation of the entire railroad on basis of the unit costs developed by the plaintiff in Arkansas would have been $28,848,510.74, arrived at as set forth in the table immediately preceding.

The Defendants' Exhibit B shows that the actual expenses of the entire line for the year 1913 were $28,185,-421.16—the difference between which figure and the constructive figure produced on basis of the Arkansas unit costs with the entire line traffic density reduced to the Arkansas level, it will be noted, is approximately 2 per cent.

It is apparent from this that the Defendants' Exhibits B, C, D, and E (and they are all of a similar character to Exhibit B, some including lines in Texas and some excluding such lines), when based upon an entire line traffic density properly comparable with that of Arkansas, absolutely confirm and substantiate the very thing they set out to disprove—that is, the accuracy of the plaintiff's cost per unit of traffic for line and terminal service, freight and passenger respectively, in the State of Arkansas in the years 1913.

In Plaintiff's Exhibit 41, it is shown that the proportion which the total traffic in Arkansas was of the traffic of the entire line, was practically level, varying less than one per cent. in the years 1910, 1911, 1912 and 1913. Inasmuch as the miles of railroad operated had not changed throughout those years, either in Arkansas, or of the railroad as a whole, an unchanged relation in the total volume of traffic means necessarily an unchanged relation of traffic density per mile of railroad; so that, while the total volume of all traffic, both in Arkansas and upon the railroad as a whole, may have fluctuated, the relation of density of traffic in that state to that of the entire railroad had not changed throughout all the years mentioned. It will, therefore, suffice to say that the demonstration, made in this connection with the 1913 figures is applicable to all of the other figures set forth in Defendants' Exhibits B, C, D and E.

Mr. Hamilton was asked by counsel if the terminal cost had any relation to the length of haul. He explained the relation and its effect upon terminal cost very clearly at pages 866 and 867 of the record by comparing the haul of 160 miles, the average length of haul on the entire line, with a haul of seventy miles, the average length in Arkansas. Only two terminal services are required in moving a ton of freight 160 miles, or the average haul

for the entire line, while four terminal services would be required in moving one ton 140 miles in Arkansas where the average haul is but seventy miles.

This is illustrated by the witness in answer to questions put to him by counsel. In that connection he said:

> "The fact that you handled a ton four times instead of twice may or may not have caused more terminal expense, but when you have set up the actual terminal expense or accumulated it on the basis of the time study or the direct allocation, then each ton that moved into or out of the terminal will bear its burden. There will be a greater expense, and properly so, accruing against a given number of tons of short-haul traffic as compared to the same number of tons of long-haul traffic. The Arkansas business is a short-haul business."

We specially call attention of the court to the evidence of Mr. Hamilton at pages 825-834, 865-869, 880, 885-886, in which he shows conclusively and beyond question that unit cost is affected by density of traffic and by the length of the haul, and explains in considerable detail the causes that create the differences. The defendants made no effort to contradict Mr. Hamilton's illustrations and statements. Defendants' contentions rest wholly upon a statement contained in Exhibit 4, where, in describing the use of constructive mileage, it was assumed that the average terminal costs in the state per ton and per pasenger handled was closely reflective of similar costs on the railroad in other states, and to a partial extract from the testimony of Mr. Hamilton at page 260 of the record in whch he stated that he made some examination and found that the cost per ton of handling freight in the two big stations of the railroad in the City of St. Louis had run between 36 and 39 cents per ton, and found that pretty close to the Arkansas average. He then stated that the exhibits in this case embrace all freight, includ-

ing carload and less than carload, and that it cost much more to handle less than carload than carload freight. That fact explains the expenses of handling freight at the two big stations at St. Louis, where all the freight handled is less than carload.

Mr. Hamilton was the first witness introduced in this case and these statements were made before the point developed by Mr. Simson's exhibit was brought out. He did not have in mind in this testimony, nor in the preparation of the exhibit, the question of terminal cost per unit, or comparison of the unit cost between traffic in the state and on the entire line; but we do not regard that as material. The facts developed in the record as to the class of expense included in terminal cost, the manner in which it is ascertained, wholly without any reference to the tons or passengers handled, which establishes beyond the shadow of a doubt that a very considerable part of that cost is unaffected by variations in the number of tons or passengers handled in terminals and at stations, rendered it absolutely impossible that the cost per unit should be uniform, unless by accident, even between stations in the same state, where the number of tons and passengers handled varied; and much less can this be so as between traffic in a state where there is a light density of traffic and a short haul, and an entire system of railroad operating in six other states where the density of traffic is from 20 to 30 per cent. higher, and the average length of haul more than double that in Arkansas. This proposition is self-evident and beyond question, and the fact that the exhibit in this case assumed, and that Mr. Hamilton assumed, but not in either case in connection with the question we are now considering or with that question in mind, that the Arkansas terminal cost would be fairly reflective of that of the system, can not change the effect of these facts any

more than his statement that twice two produced five could be taken to establish that fact; and this disposes of this whole attack upon the Formula, made with such confidence and with so little appreciation of the actual conditions of traffic, by the defendants' witness and the learned counsel.

The controlling importance of the density of traffic as affecting the cost per unit of transportation is tersely stated by the Interstate Commerce Commission in *In re* Investigation of Advance in Rates by the Carriers in Official Classification Territory, 20 I. C. C., 243, 275, in the following language:

> "In prosecuting this inquiry certain elementary principles may be noted.
>
> Viewing the freight rates of this country as a whole, it will be found that rates are usually the lowest in those sections where the traffic is most dense. It has been frequently said by railroad witnesses that this ought to be so because the freight rate should decrease as the density of traffic increases. Stated in the most general terms, the reasons are these:
>
> The cost of constructing a railroad which will handle economically traffic producing $5,000 per mile of gross revenue is substantially the same as though $10,000 per mile in traffic were handled. The grading, the ties, the embankments, the stations, would all be practically identical.
>
> The cost of maintaining this road is not much greater under the larger volume of tonnage than with the smaller. About the same number of men are required and about the same amount of material.
>
> Certain elements of cost in the operation of the road are the same whether the traffic be at the higher or the lower figure, as, for instance, the stationmen, the telegraph force, the signalmen, etc. * * *
>
> Under the larger volume of business the car loading and the train loading each lends itself more readily to economical operation.
>
> It has been noted that in the 14 years from 1896

to 1909, inclusive, the tonnage of our railroads increased more than 100 per cent. This, acting in the manner above indicated, tended largely to increase the net revenues of the railways. Not only did these causes tend to produce a lower cost of operation per unit, but the number of units was more than doubled. This makes very strongly for a reduction in the freight rate."

As showing the utter worthlessness of, and the incongruities developed in the defendants' exportation of the Arkansas unit costs to the entire line units as made in these exhibits, attention is directed to the following testimony of Mr. Hamilton on pages 833-4 of the record:

"Now, as a further illustration, or criticism, if you will, of Exhibits B, C, D and E, I would like to direct attention to the ratio of terminal cost to the total cost of the entire line that he (Simson) reproduced under his application.

In the first period his application shows that on the entire line the terminal per cent. to total freight expense is 48.27 while in Arkansas it was 38.71.

That is, his built-up figure is 48.27.

Also the terminal burden per ton mile on the long haul of the entire freight traffic, more than twice what the haul was in Arkansas, was 4.34 mills. While in Arkansas the burden on short-haul traffic is only 2.94 mills.

Those are figures derived from the constructive expense that Mr. Simson has built up by carrying Arkansas unit cost out to the entire road.

It seems to me it would be obvious on its face that were you to have a haul more than twice as long, you could not have the burden of terminal cost so materially greater, as is shown by the figures I have just given."

Following up this comparison of the freight terminal expenses made by Mr. Hamilton, a similar comparison in respect to the passenger expenses shows that while the terminal percentage in Arkansas was 20.58 per cent. of the total passenger expense the application made by Mr. Simson to the entire line in his Exhibit "B" results in

developing a terminal percentage of 24.13 per cent. of the total entire line passenger expenses. In Arkansas the terminal burden per passenger mile was 3.22 mills for an average haul of 26.39 miles, while on the entire line this application develops a terminal burden of 3.95 mills per passenger mile on an average haul of 43.94 miles.

The incongruous results thus brought out and which charge more terminal expenses per ton or per passenger mile against the long haul traffic than against the short haul traffic is diametrically opposite to the true condition, as it mathematically follows that a terminal cost when spread out over a 43.94 mile haul would be only 60 per cent. as much per passenger mile as when spread out over a 26.39 mile haul.

The comparative density of traffic in Arkansas and on the entire line per mile of road for the fiscal year 1913 is as follows (833):

	Arkansas	Entire Line	Entire line in excess of Arkansas
Tons one mile	545,927	633,906	16.11%
Passengers one mile	75,333	97,353	29.10%

The entire line figures shown above include Arkansas which on account of the latter being less than the entire line average has the effect of somewhat reducing the showing for the entire line, and, therefore, does not reflect the real density on the entire line outside of Arkansas. In order to show the density of traffic on the entire line outside of Arkansas the traffic units and mileage of Arkansas have been deducted in the following table which compares the traffic density in Arkansas with the traffic density of the entire line outside of Arkansas (833; Exhibits "C" 21 and 37):

	Arkansas	Entire Line	Entire line in excess of Arkansas
Tons one mile	545,927	646,591	18.4%
Passengers one mile	75,333	100,528	33.4%

As proving conclusively that the application made by the defendants in their Exhibits B, C, D and E has no relation whatever to the accuracy of the division of expenses in Arkansas between line and terminal service, and also proving conclusively that the density of traffic is a controlling factor in the unit costs per ton mile and per passenger mile a computation has been made for the purpose of showing the actual unit costs on the entire line under a proper application of the cost relations found in the State of Arkansas in the test months of November and December, 1913, under the formula. In this computation the entire line expenses for the same two months of 1913 as shown in Exhibit "C" were first divided between the freight and passenger service on the basis of the respective freight ton mile and passenger mile unit cost relations found in Arkansas in the same two months. This was accomplished by multiplying the corresponding entire line units by the respective freight and passenger ton and passenger mile unit costs found in Arkansas and using the results so obtained as factors for dividing the actual entire line operating expenses between the freight and passenger service, thus in effect securing a division between freight and passenger under the units and bases applied in Arkansas in the test period. The next step was to divide the entire line freight expense between line and terminal in the actual percentage relations that the freight expenses were divided between line and terminal in Arkansas, also dividing the entire line passenger expenses between line and terminal and mail and express in the actual percentage relations in which the passenger expenses in Arkansas were divided between line and terminal and mail and express. The next step was to divide the freight line and terminal expenses by the tons one mile and tons handled respectively and the passenger line and terminal expenses by the

passengers one mile and passengers handled respectively, thus bringing out a separate line and terminal unit cost in both the freight and passenger service on the entire line which are as follows:

Line freight	.446c per ton mile
Terminal freight	21.347c per ton handled
Line passenger	1.170c per passenger mile
Terminal passenger	5.948c per passenger handled

These entire line unit costs may be compared with the unit costs found in the State of Arkansas and shown in Exhibit "A" under the identical freight and passenger and line and terminal expense relations, which are as follows:

Line freight	.465c per ton mile
Terminal freight	31.139c per ton handled
Line passenger	1.242c per passenger mile
Terminal passenger	5.443c per passenger handled

The importance of density of traffic in this connection is thoroughly demonstrated by what the court had to say upon the effect of density at page 928 of the record (222 Fed., 558-9), although dealing with another subject.

It will be noted that in every instance the unit costs on the entire line are lower than the corresponding unit cost in the State of Arkansas with the exception of terminal passenger which is only ½ cent higher on the entire line than in Arkansas. These comparisons show conclusively that the density of traffic is an influencing factor in the cost of transportation per unit of traffic. Also that a similar line and terminal division on the entire line, as was made in Arkansas, necessarily produces different unit costs than those found in Arkansas and further that the Arkansas unit costs cannot be applied in measuring entire line expenses.

Any computation based on the relative unit costs which disregards density of traffic must of necessity be misleading and produce incorrect results. Any computation based upon the assumption that the relations are the same in Arkansas as on the system, and which operates

when applied to system units to charge 48.27 per cent. of the freight operating expenses to terminal on the system, as against only 38.71 per cent. in Arkansas is on its face fallacious and misleading. The conversion of 38 per cent. of the total freight operating expenses as terminal in Arkansas to 48 per cent. terminal on the system demonstrates the falsity of the assumption and the unfairness of the application; and a similar conversion of the passenger terminal percentage of 20.58 per cent. in Arkansas to 24.13 per cent. of the total operating expenses again demonstrates the error of the assumption and the falsity of the premises of the defendants' exhibits.

It is suggested in connection with a consideration of these exhibits that the defendants had ample opportunity to investigate, and did investigate the Arkansas line and terminal expenses, and could find no fault therewith. They, therefore, evolved this so-called collateral attack, and attempted to establish thereby that the plaintiff's Arkansas line or terminal unit costs were excessive. We submit that their evidence not only fails to sustain their contention, but, considered in connection with the facts, discloses a delusive, misleading and meaningless result.

DEFENDANTS' PROCESS OF FINDING AND CARRYING BACK AVERAGE REVENUES AND OPERATING EXPENSES INTO THE FOUR MONTHS OF 1907 MANIFESTLY MEANINGLESS AND MISLEADING.

Defendants' Exhibits H-1 to P-1 and Z-1.

In order to convert actual into hypothetical results, for the purpose of exploitation, and to indirectly import into the four months of 1907 revenues not earned in those months, and not possible to be earned under existing rates, the defendants conducted what they call an

equating process, which in its last analysis operates to transfer to the last four months of the year 1907, when passenger fares, state and interstate, were on a 2c basis, and the average earnings per passenger per mile were 1.94c, substantially the average passenger revenues for the years 1910, 1911, 1912 and 1913, when passenger fares were on a 2½c and 3c basis, state and interstate, and the average earnings per passenger per mile, were 2.55c, as against 1.94c in the four months' period, being 32 per cent. more than what they were in 1907.

The same is true, but in a less marked degree, in reference to freight rates, the freight earnings per ton per mile, in the four months ending December 31, 1907, averaged .839c and during the four years .922c, the average earning per ton per mile for the four years being about 10 per cent. in excess of that for the four months.

The process applied is circuitous, as will be hereafter shown in detail, but the result, so far as revenues are concerned is practically identical with lifting the average revenues for the years 1910, 1911, 1912 and 1913 out of these periods and transporting the same bodily into the year 1907, and the substituting of such average earnings under 2½c and 3c passenger fares and higher freight rates for those under 2c passenger fares and lower freight rates. The equation is purely a revenue equation, and wholly disregards the volume of traffic in the two periods, and the much greater earnings per unit of traffic in the subsequent years.

The defendants' equating process also involves the so-called equating of expenses of the four months of 1907 to the basis of the other years, but here again no effort is made to equate on the volume of traffic moving in the two periods. There is no equation of either property values, taxes, rentals or hire of equipment. Larger property values were employed in the years 1910 to 1913, in-

clusive, and while the earnings resulting from the use of the increased property values were carried back to 1907, the increased property values were not so carried back. The same is true with reference to taxes, which were necessarily enhanced in subsequent years by the enhancement of property values. They were also enhanced by the increased tax rates, but taxes were not equalized. Nor was hire of equipment.

We will now consider in detail the methods employed by the defendants in their so-called equating process, by which they created a hypothetical earning and a hypothetical return in the four months of 1907 far greater than the actual earnings and the actual return, in order to induce the trial court to hold that the temporary injunction was improperly granted, and notwithstanding the case might be decided against them on the merits, that they might be permitted to collect refunds for some part of the time during which the injunction was in force.

Their process is as follows:

The defendants have presented exhibits numbered from H-1 to P-1, inclusive, and Z-1, for the purpose of developing for the four months, September, October, November and December, 1907, a so-called normal amount of revenues and expenses and which they desire to substitute for the actual revenues and expenses found for that period.

The processes employed were, (1) to establish on the entire line the percentage of revenues and expenses accruing in the four months, September to December, inclusive, with reference to the revenues and expenses accruing during the entire year covering a period of five years, namely 1908, and 1910 to 1913, inclusive. The results of these calculations are shown in Exhibit H-1.

(2) To establish the Arkansas percentage relation of revenues and expenses to the total revenues and expenses of the entire line in the period consisting of the four months of 1907 and the four fiscal years, 1910 to 1913, inclusive, and thus establishing the so-called normal 1907 Arkansas percentage proportion of the aggregate for the entire line for the entire period covered. These percentages are shown on Exhibit I-1.

Exhibit J-1 seeks to establish an average revenue and expense for the four months on the entire line under the percentages found in Exhibit H-1 and then determines the Arkansas proportion of such under the percentages found in Exhibit I-1, thus bringing out the purported normal Arkansas revenues and expenses applicable to the four months ending December 31, 1907, which revenues they substituted for the actual intrastate revenues found in Arkansas and the proportion of interstate revenues assigned to Arkansas by the company for that period, and which expenses they substituted for the expenses that were found by the company as applicable to Arkansas during that period. Thus the Arkansas revenues which the defendants found under their averaging process, amounted to $1,259,215.13, were substituted for the $1,245,986.29 actual revenues found by the company in that period (Exhibit 27-a), and the expenses found by the defendants under their averaging process amounting to $971,544.07, were substituted for the actual expenses found by the company amounting to $1,068,-783.68 (Exhibit 27-a), which resulted in developing a net revenue under their plan of $287,671.06 as against the actual net revenue under the company assignment of $177,202.61.

The process applied by the defendants in determining the substitute revenues and expenses and the results secured thereunder are meaningless and misleading for

the reason that the average conditions in respect to revenues and expenses on the entire line in any one year are not reflective of the conditions in Arkansas during that year, much less are the conditions in respect to revenues and expenses on the entire line, representing an average of five years, reflective of conditions in Arkansas during the four months ending December 31, 1907, which is the underlying principle of the defendants' theory. Furthermore, in determining the average revenues for four months on the entire line, and, in turn, determining the percentage of entire line revenues assignable to Arkansas under this averaging process there was used as basic data the revenues accruing on the entire line, and also in Arkansas, under various different kinds of rates and which were in no respect identical or representative of the rates and conditions prevailing in Arkansas during the four months ending December 31, 1907, in which there was a 2-cent state and interstate passenger rate, and a state railway commission schedule of freight rates applied in Arkansas, while during the same four months the entire line revenues accrued under many different state and interstate rates in seven states including a 3-cent passenger rate in the States of Tennessee and Mississippi, and a 2½-cent passenger rate in Alabama.

During the other four years for which the revenues were included in this attempt to find the so-called normal revenues in Arkansas for the four months in 1907, there was charged in the State of Arkansas for both state and interstate a passenger rate of 2½ cents in the year 1910, 3 cents in the years 1911, 1912 and 1913, a 3-cent state and interstate rate in Oklahoma, Tennessee and Mississippi, and a 2½-cent state rate in Missouri and Alabama. The freight rates charged in Arkansas in 1910, 1911, 1912 and 1913 were the court tariff rates,

which were higher than the Commission rates charged in 1907. The rates charged on entire line in those years were a combination of various rates either voluntary, those fixed by state commissions of several states and by the Interstate Commerce Commission. Thus, in attempting to find the so-called normal revenue accruing in Arkansas in the four months ending December 31, 1907, under a passenger fare of 2 cents per mile and under state freight rates prescribed by the Arkansas Railroad Commission there was used an Arkansas revenue percentage proportion of all of the revenues accruing on the entire line under the various rates mentioned, and which obviously are not representative of the revenues collected under the 2-cent fare in Arkansas and the freight rates prescribed by the Arkansas Railroad Commission in their Standard Distance Tariff No. 3 which are the subject of this litigation.

The unfairness of this process of determining the so-called normal revenues in the State of Arkansas for the four months ending December 31, 1907, is clearly demonstrated by the fact that the average earnings per passenger mile in the State of Arkansas was 1.94 cents during the four months ending December 31, 1907, while in the four years, 1910 to 1913, inclusive, the average earnings per passenger mile was 2.55 cents. The average freight earnings per ton one mile in the State of Arkansas during the four months ending December 31, 1907, was .839 cents, while during the four years, 1910 to 1913, inclusive, the average earnings per ton mile in Arkansas was .922 cents. So far as the passenger side is concerned the averaging process operated to increase the factor by which the assignment was made to Arkansas by about 31.44 per cent. over what it would have been had the same rates prevailed in 1910 to 1913, inclusive, as did prevail in the last four months of the year 1907, and so

far as the freight is concerned the averaging process operated to increase the factor used in the assignment of revenues to Arkansas by about 9.9 per cent. over what it would have been had the same rates prevailed in 1910 to 1913, inclusive, as in the last four months of the year 1907.

In Exhibit J-1 there is also shown an income account based on the so-called normal revenues and expenses that the defendants found for the four months ending December 31, 1907, under their averaging process. However, when it came to determining the amount of taxes, rental income, hire of equipment and the value of the property for that period for use in this income account they failed to average these items for the four years and four months' period in which the revenues and expenses were averaged and instead applied the taxes, rentals, and property values that were found for that particular period by the company and used in its statistics, and which were much less than a four months' average based on four years and four months. The inconsistency of this application is apparent when attention is called to the fact that the hypothetical revenues imported into the 1907 period and which were a percentage of the four years and four months' revenues, were earned in a period in which the taxes were largely in excess of the 1907 taxes, and in which there were more property values employed to earn these revenues than was found for 1907, and any fair demonstration of the defendants' theory would necessarily involve an averaging of taxes, rentals, hire of equipment and property values of the entire four years and four months' period and applying this average to 1907 the same as was done with the revenues and expenses. Had this been done the rate of return on values under defendants' theory as brought

to a conclusion in their Exhibit J-1 would have been 4.77 per cent (Exhibit 58), instead of 6.62 per cent.

In Exhibit K-1 is shown another demonstration of their theory for determining the normal revenues and expenses for the four months of 1907, on the basis of the average of four years and four months, by applying what purports to be a five-year mathematical average under which 10.22 per cent. of an average four months' revenue during the period of five years on the entire line is assigned to the State of Arkansas, thus importing into Arkansas, and as representing the revenue for the four months ending December 31, 1907, revenues amounting to $1,462,405.76, which is $216,419.47 in excess of the actual amount that was found and assigned to the state in that period by the company. The amount of expenses developed for the 1907 period under this same process amounted to $1,100,857.21, which is $32,073.53 in excess of the actual expenses assigned by the company. However, as a result of the importation of the $216,419.47 additional revenue, the net revenues found for that period is $184,345.94 in excess of the actual net revenues of the period. In this exhibit the defendants have again applied the actual taxes, rentals and the property values found for the 1907 period in the company's statistics instead of the average for the five-year period which a fair demonstration would suggest. As a result of the importation of the additional revenue and the failure to consider the average of the items specified, there is shown a return on the property value of 8.03 per cent. Had they averaged the Arkansas taxes, rentals, hire of equipment and property values for the full period and applied a four months' proportion of such to the four months of 1907 the rate of return under their theory would have been 5.93 per cent. (Exhibit 58.)

Exhibits L-1 and M-1 in combination show a similar

application of defendants' averaging theory as is shown in Exhibit J-1 previously discussed and differ only to the extent that the basic figures on which the percentages were found include six years of the entire line results instead of five years and which develops in Exhibit M-1 an alleged rate of return of 6.89 per cent. Here again they fail to apply the average amount of taxes, rentals, hire of equipment and property values. Had this been done they would have found a rate of return of 5.00 per cent. (Exhibit 58.)

In Exhibits N-1 and O-1 the defendants have made a similar demonstration of their theory as shown in Exhibits L-1 and M-1 with the exception that the Arkansas percentages were based on the assignment of revenues and expenses under the company's old formula instead of under the new rate case formula, and there is shown on Exhibit O-1 an alleged rate of return of 7.51 per cent. Here again they have failed to average the taxes, rentals, hire of equipment and property values. Had this been done the rate of return shown under their theory would have been 5.51 per cent. (Exhibit 58.)

Exhibit P-1 shows a similar demonstration to that shown in Exhibit K-1 except that the Arkansas percentages are based on the results developed under the application of the company's old formula, and as a result of the importation into Arkansas for the four months of 1907 on this basis, revenues amounting to $232,159.65 in excess of the amount actually accruing in that period, and approximately the same expenses that were found by the company for that period they bring out an alleged return of 9.3 per cent. However, in doing this they again fail to assign to that period an average amount of taxes, rentals, hire of equipment and property values used in earning the revenues upon which the revenue percentages were based and had they applied the same

averaging system in determining the taxes, rentals and property values as they did in determining the amount of revenues and expenses that were imported into the 1907 period the rate of return under their theory would have been 6.75 per cent. (Exhibit 58.)

Exhibit Z-1 purports to be a comparison between the imported results for 1907 as reflected in Defendants' Exhibit O-1 previously discussed and the company's revenues, expenses, taxes, rentals and values for the four months ending December 31, 1907, as adjusted by the defendants according to their ideas in respect to the freight revenue, maintenance of equipment and transportation expenses as per their Exhibit Y, and there is brought out the difference in revenues and expenses between those shown on Exhibit O-1 which they term the normal average, and their adjusted company results shown on Exhibit Y, which they term the actual, and they find that the percentage of return found by them in their Exhibit Y is .98 per cent. below the so-called normal average return found under Exhibit O-1. In other words, they have, in Exhibit Y, set up one result under their adjustment of the company figures, and in Exhibit O-1 set up another result under the averaging system, and find that the return under the one is .98 per cent. below the return on the other.

Attention may be directed to the fact that in defendants' demonstration of their theory culminating in the results shown in Exhibits J-1, K-1, M-1, O-1 and P-1, "Y" and Z-1, there has been no separation made of the revenues, expenses, income or property values as between the freight and passenger service nor as between the intrastate and interstate business in the state, and the rate of return as found under the application of their theories is the rate of return on the entire business within the state and which includes the state and inter-

state freight and passenger business and mail and express.

Regarding these exhibits, H-1 to P-1 and Z-1, see Hamilton's testimony, 840 to 850.

The H-1 to P-1 and Z-1 exhibits were preceded by a series of similarly lettered exhibits without the suffix "1." As was pointed out by Mr. Hamilton, these exhibits included the earnings of 4,700 miles of railroad, and the expenses of 5,280 miles in some instances and 5,428 miles in others. This error was admitted by Mr. Simson (750), and the H-1 to P-1 and Z-1 exhibits prepared as substitutes for the H to P and Z exhibits.

The magnitude of the errors made in these last-mentioned exhibits is disclosed by Mr. Hamilton (842-4), and he also shows that *so elastic was the process of averaging used by the state in arriving at the results that errors of from nine million to twelve million dollars in the basic figures of earnings and expenses, upon which their averages rest, made only infinitesimal differences in the final results* obtained as between the exhibits containing the erroneous basic figures and those in which the errors were corrected.

The court in disposing of the contention made by the defendants, based upon these exhibits, used the following language (929-30):

> "The calculations made by Mr. Simson in his Exhibits K-1 and Z-1 are based only on the last four months of five years on the entire system, while the valuation is that based on the year 1907, the lowest of any year and far below the average. By this method he reduces the percentage of traffic for these periods from 36.98 per cent., which it actually was, to 36.34 per cent., which it was not in fact. Exhibit O of Mr. Simson is based on a formula spoken of as Mr. Douglass', discarded in this case because found to be erroneous by Mr. Simson and admitted

to be so by the company's accountants. His Exhibit J-1 shows the net earnings based on the four last months of 1907 to be 6.62 per cent. Exhibit M-1, which is based solely on the last four months for the years ended June 30, 1908, 1910, 1911, 1912 and 1913, shows an average profit of 6.89 per cent., or an average of the two exhibits of 6.75 per cent. In these exhibits, as in all others of Mr. Simson's, no allowance is made, as stated before, for difference in cost, taxes, density of traffic, shorter hauls shown to exist in Arkansas when compared with the entire system, nor any difference in cost between state and interstate, but the road in Arkansas is treated as part of the entire system, and the assumption acted on that the cost is the same on every part of the system, and also for intra and interstate business, an assumption wholly unwarranted and opposed to all the evidence in the case.

Nor does he make any allowance for decreased earnings, which would have resulted from the state's rates, sought to be enjoined by this action."

Traffic Expenses.

Traffic expenses, freight and passenger separately, were not included in their ultimate division between intrastate and interstate either as terminal expenses or line expenses, but were divided directly between intrastate and interstate on the basis of the volume of traffic; that is, upon the passengers one mile and tons one mile in each class, respectively, assigning in the months of November and December, 1913, 40.55 per cent. of the passenger expenses against state passenger traffic, and 3.89 per cent. of the freight traffic expenses against the state traffic. Exhibits Nos. 15 and 16.

During the test period, November and December, 1913, the average haul of the interstate passenger in Arkansas was a little more than double that of a state passenger, and there was, therefore, charged against each

interstate passenger double the amount of traffic expenses that was charged against each state passenger. On the freight side, the average length of interstate haul was three times that of the state haul, and each interstate ton was, therefore, charged with three times as much traffic expense as was the state ton. (Exhibit No. 39.)

Notwithstanding these facts, it is argued in the reply brief of defendants, page 28, that the apportionment of traffic expense between state and interstate on the passengers one mile and tons one mile operates to overcharge the state business and this is on the assumption, unsupported by the evidence, that the intrastate passenger travels without solicitation and the interstate passenger only by solicitation, and that the shipper of intrastate freight is a voluntary shipper and that the shipper of interstate freight needs to be coaxed in order to get him to make a shipment. It is also on the further assumption that all interstate business is competitive and that no state business is competitive, which not only is not supported by the evidence but is contradicted by both Mr. Nay (370) and Mr. Hamilton. (189-90 and 369) Counsel for defendants is put in the position of arguing that it is unfair to the state to charge against it only one-half as much traffic expense per passenger and one-third as much traffic expense per ton for freight as is charged for each interstate passenger and each interstate ton.

The basis here employed charges about one-half as much on the freight side to the state traffic, and substantially less on the passenger side, than was charged on the basis employed and approved by the state in the Iron Mountain case.

RELATIVE COST OF STATE AND INTERSTATE TRAFFIC AND THE FACTORS CAUSING THE GREATER COST OF STATE OVER INTERSTATE.

From the standpoint of tons one mile, in the case of freight traffic, and passengers one mile, in the case of passenger traffic, there is naturally an increased cost of state business over interstate business for the reason that the state business necessarily incurs more terminal service than the interstate business. This partially because the state ton or the state passenger is given two terminal services in the state, in their movement, namely, one at point of origin and another at point of destination, while the interstate ton or passenger at the most receives only one terminal service within the state, and to the extent that the interstate represents transstate traffic it receives no terminal service at all within the state. Another cause for the excess cost of state over interstate is the difference in the length of haul of state and interstate traffic within the state; the short haul state traffic encounters terminal service more frequently than the long haul interstate traffic for an equal number of movement units.

In the State of Arkansas during the test period, consisting of the months of November and December, 1913, the average state ton of freight was hauled 14.2 miles per terminal handling while the average ton of interstate freight was hauled 143.2 miles in the state per terminal handling (Exhibits 6, PP-1 and 5), thus the state ton used the terminal service 10.1 times as much per mile of haul as the interstate ton, instead of two times as much which would be the relation if the length of haul was the same for both state and interstate. As the terminal freight proportion was 38.71 per cent. of the total freight expenses (Exhibits 14 and 15), and, as has

been shown, this expense is chargeable against the state traffic in the ratio of 10 times as much as to the interstate traffic per ton mile, it in itself, results in an excess cost of state freight over interstate freight per ton one mile of 284 per cent.

Another cause for the increased cost of the state ton one mile over the interstate ton one mile is the fact that, because of its short haul and character of service required, the state traffic is more largely carried on local trains than is the interstate freight which on account of its long haul is more largely carried on through trains. There is a considerable difference in the line or haulage cost per ton mile for freight carried on local trains than on through trains owing to the smaller quantity of traffic that is carried on the local trains which perform a station to station picking up and setting out or peddling service, and, therefore, cannot be loaded up to their maximum capacity; besides the nature of the service requires these local trains to be longer on the road involving additional wages of the trainmen and additional consumption of fuel, water and supplies. During the test period of November and December, 1913, 74 per cent. of the total Arkansas state freight traffic, as represented in tons one mile, was carried on the local trains while during the same period only 17.8 per cent. of the interstate traffic in Arkansas was carried on such trains. (Exhibit No. 6 P-1.) Thus 74 per cent. of the state traffic encountered the higher cost local train service, while only 17.8 per cent. of the interstate traffic encountered this higher cost local train service. The line or haulage cost in the local trains was .748 cents per ton mile, while the line or haulage cost in the through trains was only .385 cents per ton mile, or only about 56 per cent. as much. (Exhibit 14.) And by reason of the fact that 74 per cent. of the state freight

and only 17.8 per cent. of the interstate freight was carried on the higher cost local trains there is an excess haulage cost of state traffic over interstate traffic of 45.4 per cent., or an excess cost on the total expense of 35.58 per cent. The total excess cost of state traffic over interstate traffic, when measured by the ton mile, by reason of the increased use of terminals and character of train service is 319.58 per cent. (Exhibit 17.)

In the passenger service there is also a natural excess cost of state traffic over interstate traffic due to the increased use of terminals and the difference in the length of haul between the two classes of traffic. The state traffic receiving two terminal services, one at point of origin and another at point of destination, while the interstate traffic at the most receives only one terminal service in the state and to the extent that this traffic is transstate it receives no terminal service within the state. The difference in the length of haul per terminal handling is another factor in causing excess cost of state over interstate. In the State of Arkansas during the two months' test period, consisting of November and December, 1913, the average state passenger was hauled 9.2 miles per terminal handling, while during the same period the average interstate passenger was hauled 39.5 miles per terminal handling. (Exhibit 6 P-2.) Thus the state passenger used the terminal 4.3 times as much per mile traveled as did the interstate passenger per mile traveled, and, therefore, under the "use" basis necessarily participates in the division of the terminal expense in the same ratio. During the test period mentioned the passenger terminal expenses were 20.58 per cent. of the total expenses assigned to the passengers (Exhibits 13 and 16), and the larger use of the terminal by the state passengers by itself results in an excess

cost of state over interstate per passenger mile of 24.6 per cent.

However, in the matter of line or haulage expense the condition is somewhat reversed and there is an increased cost of interstate passengers over state passengers one mile. This largely owing to the excess car space occupied by passengers riding in the Pullman cars over that occupied by passengers riding in coaches, and also the fact that the interstate passenger uses the Pullman cars in a greater relative degree than does the state passenger. Thus it is found under the "use" basis, that there is an excess haulage cost for the interstate passenger of 11.3 per cent., or an excess cost on the total expenses of 9.17 per cent. The net excess cost of state over interstate passengers, after allowing for the greater use of terminals by the state passenger and the greater use of car space by the interstate passenger is 15.43 per cent. (Exhibit 17.)

That the terminal service is an important factor in the relative cost of state and interstate transportation, and should be recognized and treated separately from the haulage cost, may be demonstrated by converting an average terminal cost per ton into the equivalent average cost of hauling a ton per mile. In the test period it was found that the terminal handling cost was 31.139 cents per ton and the average hauling cost was .465 cents per ton per mile. By dividing the former by the latter we find that the terminal handling cost per ton is equivalent of 66.97 miles of haulage cost. Thus a ton moving 14.2 miles per terminal handling (the average distance per terminal handling traveled by the state ton) would encounter a cost equivalent to 14.2 plus 66.97 miles or 81.17 miles of haul, which is 5.7 times as much as would be charged under a straight ton-mile division. On the other

hand, a ton moving 143.2 miles per terminal handling (the average length of haul per terminal handling of an interstate ton in Arkansas) would encounter a cost equivalent to 143.2 plus 66.97 miles, or a total of 210.17 miles of haulage cost, which is only 1.47 times as much as would be charged under a straight ton-mile division, and only about 25.8 per cent. as much as is chargeable to the state ton mile.

In the passenger service the cost of a terminal handling is equivalent to the cost of hauling a passenger 4.38 miles, the terminal handling cost being 5.443 cents and the average haulage cost 1.242 cents per mile. Thus a state passenger moving 9.2 miles per terminal handling (which is the average distance for state passengers in the test period) would encounter a cost of 9.2 plus 4.38 miles, or 13.58 miles of hauling cost, which is 1.48 times as much as would be charged under a straight passenger-mile division of expenses. On the other hand, an interstate passenger moving 39.5 miles per terminal handling (which is the average haul per terminal handling for interstate passengers in the test period) would encounter a cost of 39.5 plus 4.38 miles, or 43.88 miles, which is 1.11 times as much as a straight passenger mileage proportion would charge, and only about 75 per cent. as much as is chargeable to the state passenger mile.

Obviously, any basis for division of the expenses between state and interstate which does not recognize and treat the terminal expense as a separate proposition, such as the ton miles for freight, or passenger miles for passenger, falls far short of doing justice to the situation.

Earnings Per Ton Per Mile No Indication as to Whether Rates are Compensatory.

Defendants in their briefs (original, pp. 47-8; reply, p. 4) and elsewhere, call attention to the fact that the Arkansas intrastate earnings were for 1907, 24.79 mills per net ton mile, while the interstate revenues assigned to Arkansas amounted to only 7.76 mills per net ton mile. Defendants do not here or elsewhere call attention to the real controlling factors in determining whether or not a freight rate is compensatory. No mention is made of the relative length of haul or of the large volume of transstate business crossing Arkansas, practically in through trains, and receiving no terminal service within the state.

In the discussion of the relative cost of state and interstate traffic (pages 198 to 200 hereof) it is shown that the movement of a large proportion of state tonnage is on local trains, and that this operates to enhance very materially the haulage cost of transportation and that the cost per terminal handling per ton of freight, state and interstate without distinction, is 31.139c. Inasmuch as each state ton has two terminal handlings, it is necessarily charged with 62.278c per ton for terminal handling; and it requires the revenue received from a 25-mile haul, at 24.79 mills per mile to cover the terminal cost of handling each ton of state business, and this makes no allowance whatever for the actual cost of the line haul. The average intrastate freight haul for these 4 months was 25.44 miles. (Ex. 39.)

That the ton-mile earnings solely relied upon by the defendants as showing the reasonableness of the Arkansas intrastate rates, as applied by the defendants, is

meaningless has been repeatedly declared and demonstrated by the Interstate Commerce Commission.

In the case of *Traffic Bureau of Nashville, Tenn.* v. *L. & N. R. Co.*, 28 I. C. C., 533-5, the Interstate Commerce Commission said with reference to the probative effect of ton-mile earnings which were sought to be used to show the reasonableness of a given rate that:

> "Ton-mile statistics, reflecting as they do neither car loading, train tonnage, nor car nor train mileage, are far from being infallible guides in fixing freight rates. A high average ton-mile revenue may be due to short hauls, a preponderance of which occasions the railroad traffic manager much uneasiness, while it has been repeatedly shown that traffic low in ton-mile earnings may, because of its farther carriage and greater density be the most remunerative."

In the case of *Gustin* v. *A. T. & S. F. Railway Company*, 8 I. C. C., 277-88, the Commission used the following language:

> "The rate per ton per mile rule brings rates down to the narrowest point of scrutiny, and for that purpose is valuable; but it excludes consideration of other circumstances and conditions which enter into the making of rates, no matter how compulsory or imperious they may be, and it cannot, therefore, be accepted as controlling in determining the reasonableness of rates."

In the case of Investigation and Suspension Dockets Nos. 26 to 26-C, 22 I. C. C., 604-620, where the Interstate Commerce Commission had under consideration the rates on lake coal, that is coal originating in West Virginia and transported to ports on Lake Erie for transshipment beyond, it was urged that the low rate per ton per mile indicated that this long haul trainload commodity ought to carry a higher rate. In support of this there was offered in evidence the earnings on mer-

chandise being a little over four times as much per ton per mile as those on lake coal. Mr. Lane, speaking for the Interstate Commerce Commission, used, for comparative purposes, a movement of a trainload of merchandise from Norfolk to Bristol, a distance of 408 miles, containing 35 cars, which earned a revenue of $1,132.16, and a revenue per train mile of $2.77, and per car mile of 7.92 cents, and per ton mile of 9.67 mills, with a similar trainload of coal of thirty-five cars moving 330 miles from Pocahontas to Columbus which earned $1,222.76, the revenue per train mile being $3.02, and per car mile 10.58 cents, while the earnings per ton per mile were only 2.41 mills. After making this comparison, the Interstate Commerce Commission concludes:

> "There could be no better illustration than this of the fallacy of placing reliance upon ton-mile earnings as a basis of rate making. As the Commission has heretofore found in many cases a much fairer basis is that found in the earnings per car mile and per train mile. Much of the profitable freight carried by the railroads of the United States, and perhaps this might be made broader and could be truthfully said that most of the freight which pays the carriers the best is that which yields the lowest rate per ton mile."

So far as we have been able to discover, the Interstate Commerce Commission has not undertaken in any of its opinions to find the cost of conducting the interstate business segregated from the cost of conducting the intrastate business, and it, therefore, had no occasion to make a direct investigation into the line and terminal cost results. Attention, however, is called to the views of the Commission in the recent case of *Railroad Commission of Louisiana* v. *Arkansas Harbor Terminal Railway Company*, 41 I. C. C., 83, 177, in

which the Interstate Commerce Commission refers to an investigation made by the Texas railroad companies of the terminal and station costs of handling less than carload shipments, in which there was included the wages of employees engaged in handling shipments at stations, the cost of stationery, lighting and heating at stations, station repairs, station expenses and switching of cars. Information was secured for nine representative stations and the results of the test made indicated that these known costs per ton of 2,000 pounds for handling less than carload traffic were $1.77 for one handling, or including the handling at the other end $3.34, or 17.7 cents per hundred pounds. Apparently this terminal cost was challenged by the Texas Commission, principally by criticism.

Referring to this terminal expense, the Commission said:

> "This scale was proposed at the hearing before us in December, 1915, and met with considerable objection and criticism from some of the protestants, who also asserted that the computations concerning these station costs were erroneous in certain particulars. It does not appear, however, that the errors pointed out in the computations lead to any serious errors in the results.
>
> While we are not disposed to accept all of the claims of the carriers with reference to these station costs, for the reason, among others, that the computation made as to the freight stations examined may not represent the average station costs throughout the State of Texas, due consideration must be given to the data submitted. They are strongly indicative that the scale of rates known as the Shreveport scale is too low for short hauls in the territory in which it is intended to apply."

In its opinion in the Missouri River-Nebraska cases, 40 I. C. C., 201-64, the Interstate Commerce Commission had evidence of a character somewhat similar to

that referred to above presented to it and said in reference thereto (pp. 255-6):

> "It was found by the Nebraska Commission, as has been stated, that the average direct station terminal costs of handling intrastate less than carload shipments under the rates for the first four classes at the Lincoln station of the Burlington and at other Nebraska stations on shipments from Lincoln, were 10.92 cents per 100 pounds. These direct costs include no allowance for general expenses, taxes, depreciation, or return upon property. The average revenue per 100 pounds which is at least a minimum requirement to provide for such items may be approximately determined for present purposes by dividing 10.92 cents by 0.68, the average operating ratio of the Burlington for the years 1910 to 1915, inclusive. The quotient is approximately 16 cents. * * *
>
> It appears that under both the Nebraska distance tariff and the Iowa-Nebraska scale the base rates are too low to cover direct terminal costs, general expenses, taxes, depreciation, and return upon property. Under the Iowa-Nebraska scale this is compensated for in the increased money rate of progression for the first 40 miles. The carriers urge that rates which reflect full terminal costs cannot be maintained for the very short distances because of competition with the team, dray and auto truck. Terminal services, however, are rendered irrespective of the length of haul. The rates prescribed by this Commission are maximum rates and may be reduced to meet competition."

Another and later important interesting opinion of the Interstate Commerce Commission, however, dealing with this subject, is that of *City of Memphis* v. *C. R. I. & P. Ry. Co. et al.*, 39 I. C. C., 256, in which the Interstate Commerce Commission found that the Arkansas intrastate freight rates were lower than the interstate rates from and to Memphis, Tenn., were unduly burdensome upon interstate traffic, and designed

to discriminate against interstate business. Counsel for defendants in this case was counsel for interveners in that case. We quote as follows from the opinion of the Commission (pp. 263-5):

> "In June, 1908, Standard Distance Tariff No. 3 was promulgated by the Arkansas Commission. In July, 1908, the tariff was enjoined by the Circuit Court of the United States for the Eastern District of Arkansas upon complaint by the carriers. Pending an appeal to the Supreme Court and under permission from the District Court to increase their rates 33⅓ per cent. the carriers on June 1, 1909, made effective the so-called 'court' tariff prescribing rates higher than those authorized by Standard Distance Tariff No. 3 by from 22 to 24 per cent. The Supreme Court in June, 1913, reversed the District Court and dissolved the injunction, but without prejudice. *Allen* v. *St. Louis Southwestern Ry. Co.*, 230 U. S., 553. Thereupon Standard Distance Tariff No. 3 again went into effect. That tariff was still effective when the present case was heard in December, 1914, and February, 1915.
>
> After the Supreme Court's decision in the *Allen Case, supra,* the various carriers interested in the rates prescribed by the State Commissions of Oklahoma, Arkansas, and Missouri, among which are the defendants, formed a committee of statisticians and traffic officers to determine a method of better presenting testimony to show the effects of the state-made rates upon their revenues. This committee, as a result of its labors, devised the so-called Oklahoma formula for allocating state and interstate expenses. In *Boyle* v. *St. L. & S. F. R. R. Co.*, 222 Fed., 539, this formula was substantially approved by the District Court for the Eastern District of Arkansas, and as a result the court enjoined the application of Standard Distance Tariff No. 3 on the Frisco lines, that carrier being the sole petitioner. The court said:
>
> 'The court finds that the rates enjoined yield no profit on the intrastate business, but on the contrary show a loss.'

Following the *Boyle Case* the Frisco increased its rates intrastate. Bills in equity have been filed by the other defendants herein asking the same relief as that granted the Frisco. The *Boyle Case* is now before the Supreme Court of the United States on appeal.

From the time the Railroad Commission of Arkansas first prescribed rates, rules, and regulations for intrastate traffic defendants have protested and contested the reasonableness thereof. Standard Distance Tariff No. 3 has been continuously under attack by the defendant carriers, and even interveners admit that it required revision. This revision has been completed since the hearing, and is embodied in the so-called Standard Distance Tariff No. 5, which has been made a part of this record. From an examination of the new tariff it appears that the same general structure of rates is continued, but that certain rates for distances over 125 miles are reduced, although the Arkansas interveners admitted that the rates in Standard Distance Tariff No. 3 for such distances were 'unduly low.' It thus appears that Standard Distance Tariff No. 5 will give the carriers operating in Arkansas no substantial relief.

The present unduly low rates within Arkansas are due at least in part to the attempt by the Railroad Commission of Arkansas to protect Arkansas shippers and build up Arkansas jobbing centers. Certain of its annual reports are cited in the record as follows:

From the 1902 report:

'At all points where the Commission's tariffs have come in competition with rates from interstate points they have had the effect of breaking down the interstate rates.'

From the 1904 report:

'The effect of the Commission's Standard Distance Tariff has been to force a reduction of interstate rates to local points in Arkansas to about 60 or 70 per cent. of the scale formerly in effect.'

From the 1905 report:

'We have examined the schedules of rates of

other states and find that the (Arkansas) rates are lower than in most states.

An examination of the present rates from Memphis and St. Louis to points in our state as compared with rates in effect in 1900 when the Commission's tariff was put in will show that the interstate rates have not only been reduced from 25 to 40 per cent. but that commodity grouping in the interstate tariff has been changed to correspond with that tariff, so that the Commission has not only succeeded in eliminating the discrimination and reducing the freight on Arkansas local traffic, but has been instrumental in reducing the tax for freight on all Arkansas commerce, state and interstate.'

In view of all the facts of record we are of opinion and find that the maintenance of class and commodity rates between points in Arkansas lower by more than a reasonable bridge toll across the Mississippi River than the interstate class and commodity rates for similar distances between Memphis and Arkansas points contemporaneously in effect results in a relationship between state and interstate rates which is unduly prejudicial to Memphis and constitutes a burden upon interstate commerce. This discrimination the carriers will be required to remove. *Houston East & West Texas R. R. Co.* v. *U. S.*, 234 U. S., 342.

We are further of opinion and find that the present interstate class and commodity rates between Memphis and Arkansas points, with the few exceptions hereafter noted, are reasonable as a whole."

The Commission then proceeds to consider rates on individual commodities.

This opinion confirms the conclusion that the lower interstate ton-mile earnings are due not to the in and outbound interstate business but to the long haul heavy loading transstate business.

The Interstate Commerce Commission Findings and Conclusions in Passenger Fare Cases.

Reference is made in the original (p. 48 and pp. 83-8) and reply (pp. 6-7) briefs of defendants to the opinions of the Interstate Commerce Commission in passenger fare cases, and there is attempted to be drawn therefrom the conclusion that the plaintiff and other railway companies, in presenting their application for increases in passenger fares, in the Western Passenger Fares case, concealed from the Interstate Commerce Commission the formula for the apportionment of expenses between freight and passenger, and state and interstate business, presented to and approved by the trial court in the case at bar. This assumption is without any foundation in fact, and is an effort to prejudice the case of the plaintiff upon an alleged assumption of unfair dealing in presenting its case to the Interstate Commerce Commission. Counsel for the defendants could have ascertained, by an examination of the record in the Western Passenger Fares case, that the statement that the formula was withheld from the Interstate Commerce Commission is not correct. However, inasmuch as the defendants, and the representatives of other state Commissions were parties protestants to the granting of increases in passenger fares, it may be assumed that if they had felt that the plaintiff had taken a different attitude before the Interstate Commerce Commission than before this court, they would have directed the attention of the Interstate Commerce Commission thereto.

We invite this court's consideration of the issues submitted to the Interstate Commerce Commission and its findings in the several passenger fare cases with which it has recently had to deal. During the pendency

of this litigation, and while the charge of the unreasonableness and confiscatory nature of the 2-cent fare statute was pending judicial determination in the United States District Court for the Western District of Arkansas, the Railroad Commission of Arkansas joined with the Corporation Commission of Oklahoma and the Public Service Commission of Missouri, in a complaint filed with the Interstate Commerce Commission on the 14th day of May, 1914, alleging that the interstate passenger fare of 3c per mile in Arkansas, Missouri and Oklahoma was unreasonable and unjustly discriminatory to the extent that it exceeded the intrastate fare of 2c per mile contemporaneously maintained in these states, and prayed that an interstate fare of 2c per mile be prescribed. In other words, the defendants, the Railroad Commission of Arkansas, invoked the jurisdiction of the Interstate Commerce Commission upon the charge that the 3c interstate fare prevailing in Arkansas was unreasonable to the extent that it exceeded 2c per mile. Relief was denied and the complaint dismissed. We quote from the opinion as follows (*Corporation Commission of Oklahoma et al.* v. *The A. T. & S. F. Ry. Co. et al.*, 31 I. C. C., 532, 539-40):

> "The density of passenger travel in the territory the rates in which are involved in this proceeding is comparatively low, as is shown by a table offered in evidence. This table follows:
>
> Density of passenger traffic by I. C. C. districts for year ending June 30, 1911, as per Interstate Commerce Commission statistical report for 1911.
>
> Passengers 1 mile per mile of line:
>
> | | |
> |---|---|
> | Eastern district | 251,075 |
> | Southern district | 92,839 |
> | Western district | 102,555 |
> | State of Oklahoma (as per report of corporation commission, 1911) | 85,076 |
>
> Description of above districts:
>
> The eastern district comprises that portion of the United States bounded on the west by the north-

ern and the western shore of Lake Michigan to Chicago, thence by a line to Peoria, thence to East St. Louis, thence down the Mississippi River to the mouth of the Ohio River, and on the south by the Ohio River from its mouth to Parkersburg, W. Va., thence by a line to the southwestern corner of Maryland, thence by the Potomac River to its mouth.

The southern district comprises that portion of the United States bounded on the north by the eastern district and on the west by the Mississippi River.

The remainder of the United States, exclusive of Alaska and of island possessions, is included in the western district."

The contention of unreasonableness of interstate fares was disposed of in the following language:

"From a careful review of the record and having considered the contentions of the respective parties we do not feel justified in condemning the rates complained of as unreasonable." (p. 542.)

It may be noted in passing that the passengers one mile per mile of line transported over the railway of the plaintiff in the State of Arkansas is 75,333, being much lower than the average for any one of the districts above referred to, and substantially lower than in Oklahoma.

The Interstate Commerce Commission, with ample authority and broad experience, after exhaustive consideration, decided upon the merits of the controversy, that the evidence did not establish the unreasonableness of the 3c interstate passenger fare in Arkansas. There was no effort by either party in that proceeding to make any distinction between the relative cost of conducting the state and interstate passenger business. The Interstate Commerce Commission considered the revenues and expenses of the passenger business as a whole and without reference to the relative

cost of conducting state and interstate transportation. The defendants in this case having invoked the jurisdiction of the Interstate Commerce Commission, as plaintiffs, and submitted to it all available evidence in support of the unreasonableness of the 3c interstate fare, and having had that contention denied, upon a consideration of all passenger business in the state, it seems to us they are morally, if not legally, estopped from contending that a 2c fare is compensatory. The finding of the Interstate Commerce Commission that a 3c passenger fare was not unreasonable or excessive, of necessity carries the conclusion that a 2c fare is unreasonably low and noncompensatory.

We call attention to the resume of the findings of fact made by the Interstate Commerce Commission in the Western Passenger Fares case, decided December 7, 1915, 37 I. C. C. 1, 41, as follows:

> "The evidence in this case has shown:
>
> Substantial improvements in the passenger service have been made since 1900 at large expense to carriers, resulting in a greater degree of comfort, convenience, and safety to the travelling public.
>
> The conditions under which the passenger service is performed do not admit of all the corresponding economies in operation that have been effected in the freight service.
>
> The increased cost of service due to greater costs for labor, materials, and taxes, not offset by corresponding economies, which are practicable in operation, is entitled to consideration.
>
> The passenger business in the territory principally affected by the proposed increases is less profitable than the freight business.
>
> The basis for the fares now applied for the transportation of interstate passengers is less in this territory than in the states south, east, and west thereof.
>
> There is some justification for a lower basis of

fares in this territory than in the states west and south thereof.

This increased revenue which apparently should come from the passenger traffic should not, however, be altogether imposed upon the interstate traffic. Manifestly a person journeying by rail within the boundaries of a state cannot expect to travel at the expense, in any degree, of the interstate passenger. State and interstate traffic should each contribute equitably to the return the carrier is entitled to earn on the value of its property devoted to the passenger service. The revenue of respondents from intrastate passenger traffic within these states is approximately 96 per cent. of that from the interstate traffic. While we should permit reasonable interstate fares we cannot sanction fares that are higher than are reasonable for the service performed because intrastate fares are alleged or shown to be unduly low."

The finding of the Interstate Commerce Commission is as follows:

"The carriers have failed to justify the increased basis of 2.5 cents and 3 cents per mile, but have justified an increase in the basis for interstate fares in the States of Illinois, Wisconsin, the upper peninsula of Michigan, Minnesota, Iowa, Nebraska, Missouri north of the Missouri River from St. Louis to Kansas City, and Kansas on and north of the main line of the Union Pacific Railroad from Kansas City to the Colorado state line from 2 cents to 2.4 cents per mile.

The carriers have justified an increase in the basis for interstate fares in Missouri south of the Missouri River and in Kansas south of the main line of the Union Pacific Railroad from Kansas City to the Colorado state line from 2 cents to 2.6 cents per mile.

Proposed increases in fares from points within the territory primarily affected by these increases to points in the states east thereof, which may be arrived at by using the fares constructed on the basis herein found reasonable within the territory within which such basis apply and the lawfully

published and filed fares in the states east of the territory described, have been justified.

Fares from points in the territory affected by these increases to points on the main lines of these carriers running westerly toward the Pacific Coast and southerly through Oklahoma and Arkansas and states south and west thereof have not been justified in those instances where they are higher than would result by using the basis herein given for the territory herein described and a basis of 2½ cents per mile in the States of North and South Dakota and a basis of 3 cents per mile west and south of the territory described." (p. 45.)

It is disclosed by the opinion that in every instance the returns of the carriers plaintiffs in this action upon the value of their property devoted to the passenger service was found by the Interstate Commerce Commission to be inadequate—in fact confiscatory, and this without any distinction in the matter of the cost of conducting intrastate and interstate passenger transportation. The Arkansas Railroad Commission was heard in this case and the Interstate Commerce Commission correctly found that a 3-cent passenger fare in Arkansas constitutes a reasonable and just charge for interstate transportation.

In considering the rate of return found by the Interstate Commerce Commission on the several roads involved in the litigation in the Western Passenger Fares case, it should be remembered that the Commission took into consideration the revenues received from all passenger traffic, state and interstate, and that such revenues included the mileage of each of the carriers where both state and interstate fares were on a 3c per mile or higher basis as well as the mileage in those states having a 3c per mile or higher interstate passenger fare and a 2c per mile intrastate passenger fare. A very large part of the mileage of the several

line is included in these two classes of states. In the following states 3c interstate passenger fares prevail: Missouri, Oklahoma, Arkansas, Tennessee, Texas, Colorado, New Mexico, Arizona and California. Three cent or higher intrastate passenger fares prevail in Texas, Colorado, New Mexico, Arizona, California and Tennessee (37 I. C. C. 1, 30, 44-6).

It is important in considering the rate of return realized upon the property devoted to the freight and passenger service, as found by the Interstate Commerce Commission that the rate of return upon that part of the value of the property of the St. Louis & San Francisco Railroad Company devoted to the freight business was 4.56 per cent., and on that part of its property devoted to the passenger business was *only* 1.45 per cent.,—this notwithstanding the fact that the Frisco was receiving 3c interstate fares in Missouri, Oklahoma, Arkansas, Texas and Tennessee, and 3c intrastate fares in Texas, Mississippi and Tennessee. It should also be considered in this connection that in arriving at the return of 4.56 per cent. on the value of the property of plaintiff devoted to the freight business, and 1.45 per cent. of the value of its property devoted to the passenger business, the Interstate Commerce Commission used the so-called direct charge basis in apportioning maintenance of way and structures expenses between the freight and passenger business.

In *Business Men's League of St. Louis* v. *The A. T. & S. F. Ry. Co. et al.*, 41 I. C. C., 13, the Interstate Commerce Commission held that 2.4c per mile was a reasonable passenger fare for both interstate and intrastate passenger business in the State of Illinois, where the density of the passenger travel is 230,269 passenger

miles per mile of road, whereas in Arkansas on the railroad of the plaintiff the average is about 75,000 passenger miles per mile of road, less than one-third what it is in Illinois.

We quote from the opinion of the Interstate Commerce Commission in the Business Men's League case as follows:

> "In the Five Per Cent. Case, *supra*, at page 407, the Commission said:
>
> 'The need of additional revenues is greatest in Central Freight Association territory, and existing statutes in Ohio, Indiana, Illinois and Michigan may be obstacles to the raising of passenger fares in those states. But we are confident that if these statutory fares are clearly shown to be unduly burdensome to the carriers, the people of those great states will cheerfully acquiesce, as the people of New England have done, in reasonable increases, and that the necessary legislative authority will be promptly given. The traveling public is giving expression to its demands for better service, better accommodations, and for the adoption by the carriers of all the devices that make for safety. A public that demands such a service cannot reasonably object to the payment of a reasonable compensation therefor.'
>
> The interstate passenger fares in Central Passenger Association territory were increased generally to a basis of 2½c a mile following this expression of opinion; but the Illinois intrastate fares are still held down to 2 cents a mile, notwithstanding that much of the adjacent territory has, when the travel is interstate, a higher basis of fares. There are now 38 states in which passenger fares are permitted on a basis higher than 2 cents a mile, and Illinois is on the western confines of Official Classification territory, where the usual level of interstate passenger fares is not less than 2½ cents per mile, and partly included in the territory where the basis of passenger fares has been fixed at 2.4c per mile. *Increases in Passenger Fares in Western Territory*, 37 I. C. C., 1. As to the

Chicago, Peoria & St. Louis Railway Company the application of the 2 cents a mile basis has been enjoined by the Federal Court as being confiscatory. * * *

The improvement of the passenger service and equipment which has been demanded and accomplished at increased cost has not been met with an attendant increase in the revenue or in potential capacity of carriage. Steel cars and larger engines generally require heavier rails and other attendant increased expenses, and a sufficient time has not elapsed to ascertain definitely whether or not the percentage of maintenance charges on this new stock will be less or greater than upon the old." (21-25)

"STIMULATION OF TRAFFIC."

Counsel take a curious position in regard to the effect of lower passenger rates in the way of stimulating travel. In Plaintiff's Exhibit 61, in which the earnings and expenses, including taxes, rentals, hire of equipment and every class of expense, and the return upon the value of the property for the four years, 1910, 1911, 1912 and 1913, are set up, it was necessary, in order to ascertain the effect of the inhibited freight and passenger rates, to deduct the difference in the revenue that had accrued from the transportation of freight and passengers between the rates actually charged during those periods, as shown by Exhibit No. 33, and what would have accrued had the inhibited rates been charged. Counsel say the diminution of the revenues for the purpose of placing them on the basis of the rates in controversy was erroneous because, forsooth, if those rates had been in force it might have stimulated traffic and increased the number of passengers, and the tons of freight, moved during those years, while as to the four months in 1907, when the inhibited rates were in force, they say the com-

parison is unfair because the exhibits demonstrate that that period was not typical. Just on what ground such an assertion can be supported is past our comprehension.

It is manifest that the only way by which the effect of given rates in the way of return on the value of the property can be determined is by applying those rates to the traffic as it exists at the time, and the question as to whether the lower rate affected the result of such application by stimulating traffic, and if so, to what extent, must be determined by later developments. Realizing that it was a proper subject of inquiry in this case, the plaintiff introduced evidence for the purpose of throwing light on the question as to the effect the inhibited rates would have in increasing traffic and thereby making up, by a larger volume of business induced by the lower rate, for the decrease in revenue resulting from the use and application of that rate. Mr. Hamilton testified at some length on this subject at pages 457-459 of the record and, in connection with his evidence filed Exhibit 42, which contains a statement of facts and a table showing the difference in intrastate passengers in the months of August, 1912, and June, 1913, when a rate of three cents was in force, and August, 1913, when the rate was two cents. Counsel, in discussing this table, have fallen into the error of assuming that the second and third columns which appear on page 3 of the exhibit, represent different sales, and say the court below fell into an error by using only the ticket sales contained in the last column. The court was right, inasmuch as the first column contains the number of tickets sold, the second column the number of cash fares paid at the stations mentioned, and the last column, the one used by the court, represents the total, and therefore cumulates the two classes of passengers, namely, those buying tickets and those paying cash fares on the trains. The court

found, at page 924 of the record, that at certain stations mentioned as interior stations, namely, Jonesboro, Hoxie and Ashdown, a large part, if not all, of the excess, which was from 28 to 33 per cent. at the different stations, was attributable to the fact that those towns were near the border, and so located that there was a large interstate travel to and from them, on which the rate was three cents, as against two cents for intrastate travel, and that therefore the same conditions which existed at the border stations would naturally exist at those points. The facts upon which the finding was made are all in the record, and the court was obviously right in its conclusion. Mr. Hamilton's testimony makes it perfectly clear that the greater part of the increase in intrastate traffic was produced by the purchase of intrastate tickets, or the payment of intrastate cash fares, by interstate passengers, and even with an increase of 21 per cent. in intrastate passenger miles there was a falling off of intrastate passenger revenue of 14 per cent.

This demonstrates the fact that even if all the increase, or stimulation of travel, had been *bona fide* intrastate and attributable to the lowering of the rates, it would not have increased the earnings, and the only purpose for which such an inquiry is proper in this case is to determine whether the loss would be made up by increased traffic. Mr. Nay, who had a similar experience on the Chicago, Rock Island & Pacific Railroad, corroborates Mr. Hamilton's testimony. (333 to 336, and 436 and 437.)

In opposition to the records and testimony of the plaintiff, the defendants produced the testimony of Mr. Simson, who testified that he did not think it possible to estimate with any accuracy the results of changes in rates; that he did not know anything about the traffic conditions on the St. Louis & San Francisco Railroad in Arkansas, or on any part of that system of roads, and, further, that

it was impossible, when you have the statistics of a certain number of passengers traveling a certain number of miles for a given year under a through three cent rate, to assume that under a two cent rate just exactly the same number of passengers would have traveled that same number of miles. No such assumption has been made. The records have been introduced, and in fact a test was made, for the purpose of determining whether the increased traffic was *bona fide* intrastate, and the results of that test are developed in the testimony of Mr. Hamilton, based on reports made by conductors and traveling auditors, which can not be overcome by general assumptions and conjectures of a witness who admits that he had no knowledge whatever in regard to existing conditions. That is harking back to the old methods that were condemned in the opinions of this court in the cases reported in 230 U. S. Mr. Simson further testified that he was never a traffic man and had no knowledge or experience in regard to traffic conditions, or as to the effect of changes in rates in stimulating traffic. His testimony will be found at pages 792 and 793 of the record. When asked the effect of a change in freight rates, he said it would probably have the same effect, as a change in the rating would undoubtedly affect the direction of traffic. And counsel referred to cases before the Interstate Commerce Commission where it was shown that a change of freight rates would deflect traffic from one jobbing center to another. The suggestion of the witness, and the cases before the Interstate Commerce Commission referred to, are where changes result in different and unequal rates, but where the entire scale of intrastate rates are changed uniformly, and their relation maintained throughout the entire territory, the change would not produce the effect contended for. The inhibited passenger and freight rates were confined to the State of Arkansas and applied to all

railroads and all intrastate business. The change was uniform in its operation and effect upon all railroads, and all freight traffic, and it needs no argument to show that under such circumstances, where the change is uniform, and the relations unchanged in every respect, the movement of traffic would neither change in direction nor be deflected.

Counsel cite and quote from the opinion of the Interstate Commerce Commission in the Western Passenger Fare Cases, 37 I. C. C., 1, in which the Commission found that three cents was a reasonable interstate rate in Arkansas.

In *Oklahoma Corporation Commission et al.* v. *The A. T. & S. F. R. Co. et al., supra,* 31 I. C. C., 532, decided on July 18, 1914, in which proceeding the Arkansas Commission was a party petitioning for a decrease in the three-cent interstate passenger fares on railroads in that state, the Interstate Commerce Commission held that that rate was not unreasonable in the State of Arkansas. In examining the question the Commission found, by taking one of the exhibits and comparing the 3-cent fare period with the 2-cent fare period, that it showed an increase during the latter period, and while the 2-cent rate was in force. From the same table a similar comparison showed the opposite result, and other evidence introduced in the case, showing the extent of passenger travel in thirteen states, showed that the passengers carried one mile increased in practically the same ratio in five states where there was no change in the passenger fares, as it did in eight states where the fares were reduced. Comparing two months' business, January, 1913, and January, 1914, in the former of which the fare was 3 cents, and the latter 2, showed a decrease in revenue during the 2-cent period. After citing these facts, the opinion states that they illustrate the fact that there are

so many conditions determining the extent of passenger travel that correct conclusions can not be reached from a consideration of any one condition alone; that population was increasing in the states, representing a greater density of population, and making more travel. Periods of prosperity or reverses affect the total volume of travel. *That the comparison of revenue between 2-cent and 3-cent periods prove nothing in favor of the lower rate, because the evidence clearly shows a large number of interstate passengers did not pay the higher interstate fare, but reticketed at border stations, by which means the passengers paid the interstate fare for only a short distance, and what appears in the carrier's account as intrastate passenger revenue would, under normal condition, be interstate.* The Arkansas lines were involved in the litigation, and the facts developed in this case on this point are similar to those recited by the Commission.

The trial court gave most careful consideration to the claim of the defendants that the 2-cent passenger fare operates to stimulate traffic (Rec., 923-5; 222 Fed., 555), and concludes his consideration of the subject in the following language (925):

> "From the evidence the court finds as a fact that the two cents' rate does not stimulate passenger traffic, except at the expense of the interstate. People are not in the habit of traveling merely because rates are lower. It is probably different when special reduced rates are made for certain occasions, but in such cases it is the special occasion which causes it."

ASSIGNMENT OF INTERSTATE REVENUES TO THE STATE OF ARKANSAS FOR THE FOUR MONTHS OF 1907, AND CERTAIN CONTENTIONS IN RELATION THERETO PRESENTED IN DEFENDANTS' EXHIBITS Q, R, S, T, U AND V.

The defendants, by means of Exhibits Q, R, S, T, U and V, claim that the railroad's general auditor in assigning freight revenue to Arkansas employed bases which were erroneous in certain minor particulars, as applicable to the four months ending December 31, 1907. The contentions made in these exhibits do not relate to any other period than the said four months of 1907. It was at first claimed that they affected the *location of intrastate freight* revenue to the state for the four months of 1907 as well as the apportionment of interstate freight revenue to the state. *This contention was shown to be without foundation.* The contention, and the figures in the exhibits referred to make no distinction between intrastate and interstate revenue, but like the preceding exhibits, treat of the assignment to Arkansas of all freight revenues, state and interstate, combined.

In current railroad accounting practice, it is necessary from time to time to make certain adjustments or revisions of the freight revenue figures originally credited on the books of the carriers—claims for overcharges in rates, claims for absorption of switching charges, adjustments of rates on through cotton movements, and similar matters are presented after the original entries of revenues have been made on the carriers' books.

On Exhibit Q it is shown that in the four months ended December 31, 1907, the total freight earnings of the St. Louis & San Francisco Railroad on its entire line were $9,283,962.98, and that the adjustment against this amount of revenue for the entire line of the St. Louis & San Francisco Railroad in all states on account of overcharges,

switching claims, cotton claims, etc., amounted in the same four months to a deduction from such gross freight revenue as originally entered on the company's books, in the sum of $501,661.84.

There is also shown upon Exhibit Q an adjustment made by the auditor of the railroad against the freight revenue originally credited on the books for these four months for the entire line, amounting to $393,608.01, which is shown to be "adjustments of charges and prepay-connecting lines." This item of $393,608.01 includes also the amount of $255,024.84, shown as the last figure in the left hand column of Exhibit Q as "Net Decrease of Freight in Transit." These matters are explained by Mr. Simson, one of the accountants for defendants, on pages 619 and 620 of the printed record. In the first instance the defendants raised no objection to the character of these adjustments (with the exception of the item of "Freight in Transit," which will be discussed later) of the revenue of the entire line. Their objection went to the apportionment of these adjustments to the State of Arkansas. They claimed that the auditor of the railroad had erred in making his assignment of these adjustments to the State of Arkansas upon the basis of the relationship of the mileage of the railroad in that state to the mileage of the entire railroad, and that the apportionment of these adjustments should have been made on the relationship of the gross revenue earned in the State of Arkansas on freight traffic to the gross freight revenues of the entire railroad. This is conceded by the plaintiff.

It is the practice, sanctioned by official rate regulating bodies, to allow grain to be milled and cotton to be compressed in transit, charging the local rate into the mill or compress on the raw grain or uncompressed cotton and, subsequently, when the milled or compressed product

goes forward from the milling or compressing point, to make certain adjustments of through rates so as to refund a part of the local rate into the mill or compress.

In Exhibit R the defendants treat of such adjustments, made upon the entire grain and cotton milling in transit movement of the entire St. Louis & San Francisco Railroad for the four months ended December 31, 1907, and here again the difference between the state's accountants and the railroad's auditor is that the auditor made an assignment of these adjustments to Arkansas on the basis of road mileage as previously explained in connection with Exhibit Q, while the defendants contend, and we concede, that this adjustment should have been apportioned to Arkansas in the relationship of the gross revenues on these milled or compressed commodities in that state to similar revenues of the entire railroad.

On Exhibit S, the figure of $393,608.01, appearing in Exhibit Q is repeated, and the exhibit simply treats of the assignment of this amount of adjustment of freight revenue as between the State of Arkansas and the balance of the railroad—the railroad's auditor having applied a road mileage prorate and the state contending (properly, as the plaintiff admits) that such an assignment should have been made upon the basis of the related gross revenue as explained in connection with Exhibit Q.

Exhibit T is simply explanatory of Exhibit U, which follows it. It shows the amount of freight earnings in transit in total for the entire St. Louis & San Francisco Railroad at the end of each month for a period of nine years, included in which are the four months ended December 31, 1907, of which the state's accountants treat in its Exhibit "U."

For the information of the court, it may be well to state here in condensed form (as is disclosed in detail by

the record in the case) what is meant by "Freight Revenue in Transit."

In addition to taking up on its books, as freight revenue earned, the charges upon shipments which have arrived at their destinations and been accounted for by agents, or connecting carriers, the St. Louis & San Francisco Railroad, each month, also credits its freight revenue account with an estimate of earnings upon freight which is "in transit" and has not yet been reported as having been received at destination. These estimates credited to freight earnings in the current month's account are adjusted to the actual figures or amount of freight revenue earned on these particular shipments in subsequent months, after such shipments arrive at destination and actual earnings thereon are ascertained. This method of handling is in vogue on a great many railroads and has been for many years.

In Exhibit "U" the defendants' accountants call attention to the fact that in adjusting these freight in transit estimates for the entire St. Louis & San Francisco Railroad, freight revenues for *the entire line* in the month of September, 1907, received an added credit of $197,518.07, whereas, in the month of December, 1907, the adjustment of the freight revenue in transit resulted in a deduction from the freight revenue account of *the entire line* of $452,542.91. The State's accountants claim that this was an abnormal situation, and have, in Exhibit U, reinstated in the freight revenues of the entire line $255,-024.84, the net difference between the in transit credit to September, 1907, freight earnings and the deduction from the December, 1907, freight earnings.

This reinstatement of $255,024.84, they have prorated as between the State of Arkansas and the balance of the railroad on, basis of the gross revenues for these four months before this adjustment was made. The net effect

of this was, as shown in Exhibit U, to add to the freight revenues of every kind in the State of Arkansas for the four months ending December 31, 1907, $27,316.22.

In Exhibit V, there is shown first the freight revenues assigned to Arkansas by the auditor of the railroad in his report to the State Railroad Commission for the four months ended December 31, 1907, amounting to $852,-610.53, which is the amount appearing in the Railroad's Exhibit No. 27-A as the gross revenue from freight traffic in Arkansas, intrastate and interstate combined, for these four months before the equating process was applied thereto.

To this amount of $852,610.53, the state's accountants in Exhibit V have added what they determined was the Arkansas proportion of the adjustment set forth in Exhibits R, S and U. The net effect of this is to increase the total freight revenues in Arkansas set up by the railroad's auditor as $852,610.53 to the figure which the state's accountants claim is correct, namely: $893,121.69. The plaintiff's contention concerning Exhibits R, S, T, U and V is and the facts are that *none of the adjustments of freight revenue in the State of Arkansas suggested therein by the state's accountants have any relation whatever to, or any effect upon, the intrastate freight or passenger revenues of the company in the state in any of the periods covered by the exhibits in this case.* Analysis and comment in detail on these exhibits is given in the testimony of Mr. Hamilton on pages 834 to 839 inclusive in the printed record.

ADJUSTMENT OF MAINTENANCE OF EQUIPMENT AND TRANSPORTATION EXPENSES, FOR THE FOUR MONTHS OF 1907.

DEFENDANTS' EXHIBITS W AND X.

In their efforts to show that the passenger fares and freight rates were compensatory in the four months of 1907, the defendants used the assignment made under the old or Douglas formula, adjusting same so as to best serve their purpose, for the apportionment of maintenance of equipment and transportation expenses assigned to Arkansas, and in this four months applied the assignment made in the old or Douglas formula of maintenance of way, traffic and general expenses. Their adjustment of the old or Douglas formula for the apportionment of maintenance of equipment and transportation expenses operated to reduce the assignment of expenses to Arkansas in the four months of 1907 by $18,165.31, the effect of which was to reduce the operating expenses assigned and located to Arkansas under the Douglas formula by 1.8 per cent. The amount assigned under the Douglas formula, which involved many somewhat crude estimates, was $39,945.72 less than the amount located and assigned under the formula applied by the plaintiff in its exhibits, carefully worked out in detail. The net result of their modifications of the results under the old or Douglas formula, and their use of such modified Douglas formula results was to reduce the operating expenses assigned to Arkansas in the four months' period by $58,111.03.

The fact that the auditor of the railroad had a formula for the purpose of assigning expenses as between the various states through which the railroad operates, and that in assigning, in the month of September, 1907, a portion of the expenses of the entire railroad to the State of Arkansas, he departed from this formula in some minor matters in the compilations affecting that one

month's expenses, is discussed at length in the record. A correction of these departures is set forth in Exhibits "W" and "X," the first of which treats of maintenance of equipment expenses, and the second, of sundry transportation expenses. The whole amount of the changes indicated by these exhibits as affecting the expenses assigned to the State of Arkansas, aggregated for all classes of traffic conducted therein—intrastate, interstate, freight, passenger and mail and express is too small to have any effect or material bearing on the case. Further, so far as the plaintiff's exhibits are concerned, these departures in method by the railroad's auditor in September, 1907, were corrected, as is shown in the testimony of Mr. Hamilton, before the auditor's expense figures for these four months of 1907 were equated to the basis of the new formula, filed as Exhibit No. 1, in the manner previously explained. It may be well to call the attention of the court here to the statement made by Mr. Hamilton at several places in the record concerning the soundness of this equating process to the effect that these departures in method in the month of September, 1907, had been corrected, and that the figures prepared by the auditor of the railroad upon which the equation referred to rests, had been placed upon a uniform basis throughout all the periods covered by the exhibits in this case before such equation was made.

This is shown by the following testimony of Mr. Hamilton:

> "In these Exhibits "W" and "X," the state has worked out in detail changes in Mr. Douglas' assignment under his old formula for the months of October, November and December, 1907, so as to make the figures for those three months agree with the departure which Mr. Douglas made in the application of his formula in the month of September, 1907.
>
> The state's accountants have also, in these exhibits, substituted, to some extent, their judgment

of what Mr. Douglas ought to have had in his formula for what he really had in his formula.

I think I have said heretofore in the record, and been somewhat criticised for it, that it did not make any difference whether Mr. Douglas divided his expenses by locomotive miles or car miles, or potatoes, or apples—so far as our purpose was concerned, as long as he stuck to his unit, his basis.

After we reworked our Exhibit 27-A to put the one month on a parity with the four years and three months, instead of reworking the four years and three months to put them on a parity with the one month, we had, after that was done in Exhibit 27-A, Mr. Douglas on a uniform basis upon the principle of his formula.

I have said that Mr. Douglas' basis of his formula, when this correction for September is made, becomes uniform and consistent down to June 30, 1913, where our concern with it stops, so far as this issue is concerned." (850, 851) See Mr. Nay's evidence, *supra*. (345-346)

Mr. Simson also admits that Exhibit 27-A, by the application of the old or Douglas formula in September, 1907, was put on the same basis as the months that follow. (716)

DEFENDANTS ADJUSTED NET INCOME AND RETURN UPON PROPERTY VALUES FOR THE FOUR MONTHS ENDING DECEMBER 31, 1907.

DEFENDANTS' EXHIBIT Y.

This exhibit offered by the defendants purports to be a statement of income and return upon the value of the property in Arkansas for the four months ending December 31, 1907. It makes no segregation of the earnings and expenses which it assigns to the State of Arkansas, as between intrastate, interstate, freight, passenger, mail and express traffic, and it therefore is of no value in determining the matter at issue—whether or not the intrastate freight and passenger rates are confiscatory.

It is a composite of the Plaintiff's Exhibit 27-A and the Defendants' Exhibits "V," "W" and "X." All of the figures reflecting earnings in this exhibit are drawn from Plaintiff's Exhibit 27-A, with the exception of the freight earnings which are those arrived at in the Defendants' Exhibit "V" after making the adjustments of the assignment to Arkansas of various deductions from, and additions to, gross revenues which have been explained in connection with Exhibit "V," which adjustments had no effect whatever, or, at most only an infinitesimal effect, upon the intrastate revenues in Arkansas. The operating expense figures appearing in Exhibit "Y" are drawn from Exhibit 27-A, with the exception of maintenance of equipment expenses and transportation expenses, which figures are taken from Defendants' Exhibits "W" and "X," and are $58,111 less than the proper amount. As has been explained, the figures in Exhibits "W" and "X" are the result of an adjustment of an error of the auditor of the railroad in applying his old formula in the month of September, 1907, so that in their Exhibit "Y," the defendants adopt the auditor's old formula for the assignment to Arkansas of maintenance of way and structures, traffic and general expenses but reject that formula so far as maintenance of equipment and transportation expenses are concerned. Here we have a hybrid proposition which does not rest firmly upon any one basis, but is a composite of two bases, to neither of which the defendants' witnesses adhered, as was developed when Mr. Simson stated that, considering all of the exhibits offered by the defendants, Exhibit "O" (afterward changed to "O-1"), reflected the facts which they desired to stand upon in this case. (641)

Explanation has previously been made of Exhibits "Q," "R," "S," "T" and "U," all of which are crys-

tallized in Exhibit "V" and Exhibits "W" and "X" have also been explained. Now, Exhibit "Y" is the concrete presentation of the effect of all of these Exhibits, "Q," "R," "S," "T," "U," "V," "W" and "X," and brings all of the calculations, data and erroneous applications set forth in them down to a final showing of return upon all of the business of the railroad within the State of Arkansas—*intrastate, interstate, freight, passenger and mail and express all consolidated*—as determined by the defendants' accountants for these four months. So, when Mr. Simson, the principal accounting witness for defendants, who prepared and introduced these exhibits, testified that they stood on Exhibit "O" (641), he discarded the remaining exhibits—"Q" to "Y," inclusive—and we submit that they should be disregarded and dismissed from consideration by the court.

Defendants' So-Called Income Account.

Defendants' Exhibits AA and BB.

As explained by Mr. Simson (628-9), Exhibit AA is made up simply by copying the total expenses, earnings, taxes, etc., in Arkansas, from Plaintiff's Exhibits 20-A, 22 and 23, which earnings, expenses, etc., are those of the year ended June 30, 1913, and which, as we have shown, were actually assigned and allocated to the State of Arkansas by the plaintiff on basis of its formula, Exhibit No. 1, but which exhibits were subdivided by the plaintiff, also, in accordance with the formula as between the intrastate and interstate, freight and passenger and mail and express business. On the pages of the record referred to, there is a reference to an adjustment of a rental item, known as the "Kansas City, Fort Scott & Memphis Railroad—Guarantee Dividend." *This is the item that was eliminated at the suggestion of the court,*

and the result of such elimination shown in the Plaintiff's Exhibit No. 28. So therefore, Defendants' Exhibit "AA" is wholly based upon and quotes verbatim figures as to earnings, expenses and other charges which were produced by the plaintiff as one step in the process of determining results of the intrastate freight and passenger business in Arkansas, but the defendants, in filing this exhibit, do not show to the court any such separate results, *contenting themselves with showing the return upon the entire business in Arkansas of every class and character combined,* including both intrastate and interstate, under 3-cent passenger fares, state and interstate, and freight rates, state and interstate.

Exhibit "BB" is similar in nature to Exhibit "AA," but the earnings and expense figures included therein are those assigned to the State of Arkansas under the railroad's old formula and which were used by the railroad simply as a background of comparison to obtain percentage relationships between the old formula and the new, to be used in equating the figures obtained in years prior to 1913 under the old formula to the basis of the new formula. Here again *the defendants have simply shown a figure of return upon the entire business* of the railroad in Arkansas on the basis of the company's old formula. They have included in Exhibit "BB" an adjustment of the expenses of the Memphis terminal which is fully described in Exhibit "G," and by reason thereof added to the expenses in Arkansas, for every character of business combined as determined under the company's old formula, the sum of $72,107.48. It will be observed that no such adjustment was made in connection with Exhibit "AA," which quotes the expenses assigned to Arkansas under the railroad's new formula (Exhibit No. 1), and that there is no controversy

as to the actual assignment of expenses to Arkansas under the new formula.

Just what aid or information to the court these Exhibits "AA" and "BB" could possibly be is not apparent when we consider that the problem to be dealt with is the return upon intrastate freight and passenger business only. These exhibits deal with the return upon the entire business of every character, intrastate, interstate, freight, passenger and mail and express combined, within the state.

Before passing from the discussion of these exhibits, it will be well to call attention to the fact, as shown by testimony of Mr. Hamilton on page 852 of the printed record, that during the year ended June 30, 1913, which is the period covered by these two exhibits, the railroad was charging an intrastate passenger fare of three cents per mile and rates on basis of what has been known as the "Court Tariff" for freight transportation, in Arkansas. The rates sought to be enjoined were a two-cent passenger fare and a basis of freight rates much lower than the "Court Tariff"; so that Defendants' Exhibits "AA" and "BB," even as to the total traffic of every character within the state, overstate the net income and percentage of return upon the value of the property which would have been earned had the railroad been charging the two-cent intrastate passenger fare and the freight rates prescribed by the Arkansas Railroad Commission which were sought to be enjoined.

The whole situation as to these Exhibits "AA" and "BB" is tersely stated by the Witness Hamilton, on pages 851, 852 and 853 of the printed record.

Qualifications of Witnesses.

Counsel attempted to compare the qualifications of Mr. Simson with Mr. Nay and Mr. Mayer with Mr. Hamilton.

Mr. Nay has had thirty-one years' railroad experience and at the present time, and for some years past, has been and is the chief accounting officer of one of the largest railway systems in the world—the Chicago, Rock Island & Pacific Railway. His experience has brought him into constant touch with all of the activities of a railroad, which must necessarily find their ultimate record in the accounting department, or upon the statistical records kept by carriers. Mr. Nay has not been a railroad accountant alone, although that occupation affords opportunities for the broadest grasp of information pertaining to the details of railroad operation. He has also been a devisor and compiler of railroad operating statistics. His testimony in this case shows an intimate familiarity with all the details of railroad operation.

Counsel attempts to compare the testimony of Mr. Nay, in this case with his testimony in a former case of the St. Louis, Iron Mountain & Southern Railway Company, and severely and very unfairly criticise him in that connection. The case referred to arose several years ago. An imperfect test made during the month of October, 1907, on another railroad was introduced in evidence by the railroad company by which the test had been made. While Mr. Nay was on the stand in that case he was questioned in regard to the value of the test, and testified that he did not believe that the month of October, or any one month, should be taken as representative of any six or twelve months, where you wish to obtain accurate results. That October was not a normal average month because the business in that month was the heavi-

est in the year. When asked, in effect, if the testimony he then gave was consistent with his testimony with regard to the test period in this case, he pointed out the difference, that in this case a period of two continuous average months was taken; that two consecutive months afforded a better test than one month, and that his judgment, at this time, was also influenced to an extent by the similarity of the results shown by the two months and the four months tests made under his direction on the Chicago, Rock Island & Pacific Railway. (328, 329, 330, 371, 372)

Attention was called to a statement made by Mr. Nay in the case referred to, that he thought it would be remarkable if the character of state and interstate tonnage, and all the conditions surrounding it, were the same. He explained that in making the statement he had in mind the difference in the proportions of carload and less than carload, intrastate and interstate freight, and that the question of delays in transit growing out of congestion, which had occurred on the line of the railroad in that case, the resulting lap-overs, and the relative effect thereof on intrastate and interstate freight, was involved. His statement in regard to this was as follows:

> "I am not positive now, because, in order for these percentages to be of value, supposing their condition had been met outside of the lap-overs, and they are correct in every other respect except the lap-overs; in order for them to be of value, considering the lap-overs, it would be necessary not only for the state and interstate to move coincidently, or be delayed coincidently, if there was a congestion, but it would be necessary for them to move coincidently on local and through trains. If traffic that moves on through trains is delayed, it must be delayed in the same proportion as traffic which moves on local trains, etc." (375)

This reference will give the court an idea of the differ-

ence in the conditions that existed in the two cases in which his testimony was taken. He was further asked if he did not state in the former case that it would not be fair to take the last six months of a year to be representative of the whole twelve months, and showed that he was then testifying in regard to the net earnings, that he had so testified and still had the same view, and then pointed out the distinction between using one period for the purpose of determining the gross and net earnings, and the relations thereof, during another period, and of determining the relation between the different classes of traffic by ascertaining operating results in the handling and moving of traffic, and said, while it would be foolish to assume that the earnings of any previous twelve months would be six times what they were in a shorter period, it may be assumed that the relation between the expenses of different classes of traffic would remain substantially the same where the conditions are similar, pointing out very clearly the distinction which counsel seems to have overlooked between the two propositions. His attention was next called to a statement made before the Interstate Commerce Commission, that he thought the net operating revenue for a given month was an index of the entire year. The connection in which the statement was made is shown and explained by Mr. Nay at pages 378-9 of the record. It is not necessary to go into it now further than to state that the matter arose in an application for increased interstate rates before the Interstate Commerce Commission, and Mr. Nay, having furnished the Commission with the earnings of his road for some ten years, was putting into the record some additional compilations, including seven weeks additional, and the question was asked, and the statement made with reference to the effect of the figures contained in his earnings sheet as an index to whether

good times were coming, which was a material question, it having been asserted that business was improving, and that the railroads did not need the increase in rates they were asking for because "times were improving," and Mr. Nay's statement was made from that point of view, and no other.

It is not worth while to pursue the matter further. The court will find, upon reading the evidence referred to, that the statements in Mr. Nay's former testimony were made with reference to particular conditions that did not exist and were not involved in this case, and which do not appear upon the partial extracts from his evidence, or else, that it related to matters in regard to which he had upon further investigation modified his former opinions. At the time the evidence in the former case was taken, he, in common with many railroad men, believed the gross revenue was the best general factor for dividing the common expenses, but when that basis was eliminated by the ruling of the court in the Minnesota and other cases, and it was announced that a use unit must be used, a new line of investigation was adopted by those charged with the duty of investigation, including Mr. Nay. It is manifest that he gave very careful and detailed attention to it and caused the series of tests, about which he testified, to be made, and it is not surprising, or to his discredit as a witness, that he should, and did in the course of the investigation, have occasion to modify his views in regard to some of the questions involved. The whole matter is very well set out in the suggestions of the court, in whose presence the evidence was taken, at page 399 of the record, on objection to the relevancy of the testimony. The extracts used by counsel in questioning Mr. Nay in this connection show how misleading, and calculated to cause misunderstanding and erroneous impressions, is the practice of producing par-

tial extracts from former evidence of a witness in a case of this character.

Mr. Simson was employed in railroad service but eleven years, and his last railroad experience was in 1901, fourteen years before he appeared as a witness in this cause. The record discloses that in all his railroad experience, he had not progressed beyond the position of a chief clerk, a general bookkeeper or traveling accountant, engaged in checking up the affairs of station agents. Counsel refer to his experience in commercial accounting practice, as a member of the staff of Haskins & Sells, and the fact that, as an employee of this concern of public accountants, he has been occasionally engaged in the verification and auditing of railroad accounts. This is the total of his railroad experience. He has never held an executive position, nor one of such a character as would give him an insight into the details of railroad *operation*, such as Mr. Nay has enjoyed and improved as his testimony shows, coupled with the fact that such railroad experience as he has had, terminated fourteen years ago, while Mr. Nay's experience has come continuously down to the present day; and that Mr. Nay's experience and knowledge has been constantly broadening is indicated by his advance in railroad service. Mr. Simson can not be properly compared with Mr. Nay.

Counsel refer to Mr. Hamilton as having had railroad experience of an accounting nature only; this misunderstanding has been due to their lack of familiarity with the character of railroad work embraced in the duties attaching to the positions which Mr. Hamilton has filled in his seventeen years' railroad experience. The facts are that he has been engaged in practically every line of railroad work, and for many years was employed in stations, yards and terminals, where the practical everyday operation of the railroad is carried on. He has been

employed, not only in the operating department, but the traffic department and the accounting department as well. His opportunities for observation of every detail of practical operation have been numerous and have covered a long period of time. His intimate knowledge of these subjects is shown by his familiarity with the minutest details of operation, disclosed by the testimony. Since January, 1912, he has been the personal representative of the operating vice president (now one of the receivers) of the St. Louis & San Francisco Railroad, employed particularly in the investigation of operating conditions and operating results at first hand through daily contact with all branches of the service from the section foreman to the general manager. His duties have been to analyze all of the operations of the railroad, to recommend betterments of such operating conditions and practices to the management, and to present information to the executives of the railroad as to the progress and conduct of the company's business in general and in detail. The careful and minutely detailed way, in which the tests reflected in the exhibits in this case were planned and carried out by him, is evidence of his intimate knowledge of railroad operation. The position he now holds—supervisor of efficiency—reporting directly to the receivers of the railroad, indicates the views of the executive officers of the railroad as to his capacity and knowledge of the economics of railroad operation.

Mr. Mayer, at the time he testified in this case, was an employee of the Oklahoma Corporation Commission, and had had eleven years' railroad experience, beginning as a section laborer on the Burlington Railroad, followed by a few months' service as a freight brakeman, with a return to work as a laborer. He was then employed in minor clerical capacities, finally becoming a clerk in the president's office of the M. K. & T., which

latter employment he refers to as "in an executive capacity." His last experience was in the accounting department of the same railroad, covering, altogether, fourteen months. Counsel speak of his practical railroad experience having been as much or more than that of Mr. Hamilton, and quote him as authority on matters which could only be passed upon by a trained civil engineer or mechanical engineer, although Mayer, on cross-examination, admitted that he had no training as an engineer, and showed by his testimony that he had no knowledge of many important matters connected with the subject on which he was testifying. He has never occupied a position in railroad service which would give him a broad and coherent view of the whole railroad problem, as had the witnesses for the plaintiff. He has never been employed in other than minor capacities, and the record discloses that he had never improved his opportunities to broaden his views even in those minor positions, as is shown by his ignorance of the most elementary railroad matters.

Another witness for the plaintiff was J. A. Frates, general superintendent, having at the time he testified exclusive charge of the operation of 2,700 miles of the St. Louis & San Francisco Railroad, a little more than one-half of that system. He had had thirty years' railroad experience in practically every capacity in the operating department, the last fourteen years of which had been on the railroad of which he is now general superintendent. His intimate knowledge and clear understanding of railroad operating practices and details is apparent throughout all his testimony. He controverted many of the contentions of Mr. Mayer and it is apparent from his testimony that his statements rest upon a thorough knowledge of actual facts and conditions, and not on the con-

jectual or hearsay matter which underlies many of Mr. Mayer's statements.

Mr. Symons, whose testimony was attempted to be overcome by Mr. Simson, is shown not only by his record in railroad service, but by his testimony in this case, to possess very thorough knowledge of all phases of practical railroad operation and intimate knowledge of his own peculiar field—railroad mechanics, not only in itself, but in its relation to all other branches of railroad operation, and that his advice and counsel is sought after by railroad operating officials all over the country. Mr. Simson, whose testimony was offered for the defendants in opposition to that of Mr. Symons, admitted that he had no experience, upon which to base his conclusions, or practical knowledge whatever of the subject.

SOME MATERIAL ERRORS IN DEFENDANTS' ORIGINAL BRIEF.

At page 47 of original brief, counsel for defendants say that the court's statement of the reasons for the extra cost of intrastate over interstate traffic is almost identical with the testimony reviewed by Mr. Justice Hughes in the Minnesota Rate Case (230 U. S., 352, 462-464.)

The testimony in the Minnesota Rate Case, referred to, rested solely upon the expert opinion of railroad operating men. In this case it rests on an actual determination of the facts based on the test conducted in the stations, in the yards, on the trains—in fact, throughout every activity of the railroad, concurrently with its every-day operation in a representative test period; so, it is apparent that the court's findings of an extra cost of intrastate over interstate traffic should not bear the stigma of resting upon testimony similar to that previously rejected by this court.

This question of extra cost is discussed at pages 45-49

of said brief, in which the claim is made that the only extra cost of intrastate over interstate is to be found in the fact that the intrastate incurs two terminal costs to the interstate one. It is also argued that the higher intrastate freight rates compensate for this extra cost, thus attempting to blend two separate and independent matters. The rates cut no figure in ascertaining the cost of transportation, and whether or not they are compensatory can only be determined by ascertaining the cost of conducting the traffic, without any reference to the rates, or revenue, derived therefrom, and subsequently comparing the cost of traffic with the revenues derived from it. Plaintiff pursued the only proper, or possible, method of determining the cost of the various classes of traffic, by ascertaining through tests, in actual operation, the cost of intrastate business, and then deducting such cost from the intrastate earnings, in that way obtaining the resultant net gain or loss. Counsel say the fact that there is some return upon the total business, intrastate and interstate combined, makes the result shown by the plaintiff's exhibits grotesque. This mode of reasoning is a mere juggling of words, and only serves to confuse the issue and becloud the truth.

At page 47 of their brief counsel state that:

> "There are certain statistics in this record approved by the railroad's accountants which effectually dispose of any theory that the net results of the intrastate are not as compensatory as the net results of the interstate."

And the further statement that:

> "These figures were compiled by Mr. Simson and approved by Mr. Hamilton."

In support of this statement, counsel refer to pages 874-876 of the record. The facts in this connection are that, upon cross-examination, Mr. Hamilton stated

that certain figures of average gross revenue per ton mile computed by Mr. Simson had been correctly calculated. This will be found at the pages of the record previously referred to. There was no reference whatever to the subject of operating expenses by the witness and no conclusions as to net gain or loss, simply a statement as to gross revenues per ton mile. How this statement by the witness can be construed as it has been by counsel in the instance mentioned is past our understanding.

Counsel, in criticising the result of the test as reflected in the excess cost of conducting intrastate over interstate traffic, call attention to the fact that the terminal cost per ton of handling intrastate and interstate freight is the same, and draw therefrom the conclusion that there should be no difference except in terminal cost. They overlook the fact that there not only is a double terminal expense on each ton of intrastate freight, growing out of the fact that it has two terminal handlings, as compared with one terminal handling of each ton of interstate freight, but also the further fact that as the haul decreases in length the spread of terminal cost is very much larger per ton mile than it is over the longer hauls. The average haul of intrastate freight in Arkansas is twenty-five miles; of interstate freight, covering only that part of the haul in Arkansas, it is eighty miles, but because of the transstate tonnage there is only one terminal handling for each 140-mile interstate haul. It is apparent at a glance that when you spread two terminal costs of a ton of intrastate freight over twenty-five miles, you get a very material increase over the cost per ton mile obtained in the spread of one terminal cost over an eighty-mile haul of interstate freight. They also assume that the line cost per ton mile is the same for both classes of freight. That is true when carried

on the same train, but counsel overlook the fact that the loading of the local trains is very much lighter than the loading of the through trains; that the local train is a more expensive train per mile to operate than the through train, by reason of having a larger crew, and the fact that the local train requires a longer time on the road to make a given train mileage, and that a very large proportion of the intrastate freight, and a very small proportion of the interstate freight, is carried on local trains.

Counsel for defendants at page 47 of his original brief directs attention to the fact that 85 per cent. of the freight carried on the local trains is interstate and 15 per cent. intrastate, and say that:

> "It is rather difficult to see how the heavier expense of the local train can work out a heavier expense for the intrastate traffic when over 85 per cent. of its load is interstate traffic."

The proportions of freight which go to make up the total loading of the local trains, and which are reflected in the percentages quoted by counsel, have no real bearing upon the question. On page 1 of Exhibit 6, there is set forth separately the net ton miles of revenue freight carried on through trains and on local trains in Arkansas, subdivided in each case between intrastate and interstate. These figures show that of the interstate freight, 36,860,653 ton miles was carried upon through trains and 7,976,402 ton miles upon local trains—or, stated in percentages, 82 per cent. of all the interstate freight was carried upon the less expensive through trains and only 18 per cent. upon the more expensive local trains. The exhibit shows in the same table that of the intrastate freight, 472,506 ton miles were transported upon through trains and 1,343,339 ton miles were transported upon local trains. Expressed in percentages,

the figures show that 74 per cent. of the intrastate freight was transported upon the more expensive local trains and 26 per cent. upon the less expensive through trains. With 74 per cent. of the total intrastate freight and 18 per cent. of the total interstate freight carried upon the more expensive local trains, counsel's contention, as quoted above, ceases to be of any force.

It should be obvious that when the line expenses are divided between intrastate and interstate freight upon the basis of the net ton miles of each class of traffic carried on the through and local trains, respectively, in the manner described in plaintiff's exhibits, there will necessarily be a very material excess of cost per ton mile for intrastate, as compared with interstate business, for line expenses alone, to say nothing of the double terminal cost and the short haul of the intrastate traffic.

The effect of the carrying of this large proportion of state traffic on local freight trains is carried to a final result and is directly reflected in the extra cost of the state over the interstate business, and the statements in the defendants' reply brief to the contrary are in error. It is reflected in the results in this case just as it was reflected in the results obtained by the representatives of the state in the Iron Mountain case.

The same conditions making for the extra cost of transporting intrastate as compared with interstate freight obtain with intrastate and interstate passenger traffic, as the same methods of ascertaining the extra cost of the intrastate over the interstate have been employed as in the case of the freight traffic, except that instead of the distinction between through and local trains plaintiff has segregated the travel in ordinary coaches from that in Pullman cars, as is explained in the exhibit.

At page 72 counsel, in discussing the matter of appor-

tioning values on basis of apportionment of operating expenses, states that:

> "An error, however small, in the assignment of these expenses quickly runs into big figures in their application to the property values."

And makes a hypothetical illustration of a railroad property, valued at $16,000,000 having operating expenses of $100,000, which have been assigned 50 per cent. each to the freight and passenger services. The illustration assumes an error of $1,000 in the apportionment of these expenses, which, if added to the passenger expenses as a matter of correction, would make the passenger percentage of operating expenses 51 per cent. The illustration then points out that this corrected percentage, applied to the valuation of $16,000,000 would throw $160,000 more property value to the passenger side, and that it would require $9,600 of net income from passenger sources to make a return of 6 per cent. upon this additional $160,000 property value.

The fallacy of this illustration is apparent, and it lies in the inconsistent relation of the valuation and operating expense figures assumed. Inasmuch as counsel spoke of a 6 per cent. return, it is evident that the period intended to be taken for the illustration is one year. To assume that the total expenses of a railroad property which was valued at $16,000,000 would be but $100,000 per annum is utterly inconsistent with common knowledge. Exhibit 61, filed in this case, shows the value of the property (by stipulation) to be $18,000,000 in round figures, and in operating this property for a year, the same exhibit shows that operating expenses of over $3,000,000 were incurred. The most elementary knowledge of railroad operation would make it plain that a railroad property sufficiently large to be valued at $16,000,000 could not be operated for an entire year with

an outlay of only $100,000 for operating expenses. Taking counsel's assumed error of $1,000 and substituting $3,000,000 for the hypothetical figure of $100,000 operating expenses, it follows that the percentage of error which would affect the division of property values is thus reduced to *three one-hundredths of one per cent.* When this percentage is applied to the $16,000,000 property value, the amount of property transferred, as in counsel's illustration, to the passenger side, is only $4,800 instead of $160,000, as suggested. To produce a difference of one per cent., as the result of an error, in apportioning expenses on a railroad with a value of $16,000,000 and with operating expenses properly proportioned thereto, namely, $3,000,000, the hypothetical error in distribution of expenses between the freight and passenger services would have to be $30,000 instead of $1,000, as assumed by counsel in their illustration. The fundamental error in the illustration consists in the improper relationship of the operating expense and property value figures quoted as a basis for the illustration.

As to the error of $23,000 *in connection with which the hypothetical illustration was made, it can be stated that if worked out to a conclusion in conjunction with the plaintiff's exhibits, it will be found that the* $23,000 *applies, not to freight or passenger alone, but to both, and when worked out to an ultimate conclusion on the plaintiff's basis, makes no difference whatever in the distribution of the property values between those two classes of traffic.*

In this connection, it should be remembered that in the hypothetical illustration used by defendants, the error in operating expenses is all thrown to one side, whereas, the difference of $23,000 referred to is spread over both the freight and passenger business.

At page 73 counsel say, with reference to the matter of equating the expenses of prior periods on basis of 1913 results:

> "It is a self-evident proposition that the assignment to Arkansas as a whole cannot be affected by a redistribution of part of those costs between freight and passenger. The proposition was dealing entirely with the amount of expenses assigned to Arkansas and not their distribution."

This refers directly to the matter of equating the Interstate Commerce Commission accounts, either piecemeal, or in total for each of the four general groups, which is discussed at length on the same page. It is evident that neither counsel nor the accountants for the defendants have understood the equating process. In order to assign expenses in the prior periods, it was necessary either to apply the new formula (Exhibit No. 1) in detail in those prior periods (and why this was impracticable has been elsewhere stated) or to reflect the processes of the new formula in those prior periods by a process of equating 1913 results obtained thereunder. From criticism made by counsel, it is apparent that they have considered but one of the results which the equation was designed to effect, that is, the assignment of expenses to the State of Arkansas. The processes of the new formula, which it was necessary to carry back through an equation, were three in number; the assignment of the expenses to the state, their subdivision between the freight and passenger services, and the adjustment of the company material, or nonrevenue costs, between the freight and passenger services. These three steps were worked out in detail in 1913, and it was necessary, if the new formula was to be properly reflected in the prior periods, that all three processes should be carried back, through an equation. In the figures prepared by the defendants' accountants and discussed on page 73 of

the brief, only one of these processes was worked out, namely, the assignment of expenses to the state.

This is the criticism of the equating method made by the accountants for the defendants, and it was the complete working out of all three processes that practically reversed the results obtained by them, as discussed at page 73 of the brief.

At page 9 counsel say, referring to Plaintiff's Exhibits 27-A and 28, that they were filed to correct mistakes which had occurred in Exhibit 27, which is characterized as the final summary of the plaintiff up to that time.

Counsel seem to have no clear conception of the contents of these exhibits. Neither of them is a final summary. Exhibit 27-A, and its predecessor, 27, covered only the four months of 1907. Exhibit 28 applies to all of the four years and the four months appearing in Exhibit 61, and simply shows the effect of eliminating the rental charge of the Kansas City, Fort Scott & Memphis Railway, which was done at the suggestion of the court. Counsel also refer to the revision of Exhibit 27, which is reflected in Exhibit 27-A, and state that Exhibit 27 needed "reduction to better bases to make it reflect the actual condition of affairs," and then refer to Defendants' Exhibits V, W, X and Y. The fact in connection with this matter is that the accountants for the defendants sought to substitute their preference of bases of division of expenses, for the formula of the railroad, and the reference to this particular matter as an "error" is in itself erroneous. (271-287)

At page 17 counsel, in discussing the division of value of tracks and facilities between freight and passenger, and line and terminal, have assumed that all such divisions were made in the ratio of the amount of mainte-

nance expenses of such facilities charged to each of said classes of service. They overlook the fact, as shown by Plaintiff's Exhibit 18, that the value of many individual facilities was directly allocated to freight or passenger or line or terminal, on account of the exclusive use of such facilities by one of these classes of service.

At page 18 it is stated that the plaintiff has apportioned the "original cost of roadway and structures between the various classes of traffic." It is true that the valuation made by the chief engineer of the railroad reflected the original cost of the property, but it is upon this stipulated value that the final showing made by the plaintiff in Exhibit 61 is based. Attention is further called on this page to the fact that the plaintiff divides certain roadway and structures values on the basis of transportation expenses, instead of using maintenance-of-way expenses for that purpose, as prescribed in the formula. The record shows that subsequently the plaintiff, for comparative purposes made this division on basis of the maintenance-of-way expenses and that the difference in the results obtained was negligible.

At page 19, the testimony of witness Mayer is referred to, in which he claimed that the formula (Exhibit No. 1) is in error in classifying the making up and breaking up of trains as a line expense, and that by reason of charging such expenses to line, intrastate freight traffic is charged with expenses not incurred by it.

The fallacy of this position has been shown by Mr. Hamilton (859-861, 876-877), and Mr. Mayer ultimately was made to admit its fallacy on cross-examination. (693-700)

On this point, see the opinion of the court. (920)

At pages 25 and 26 counsel state that the four months

of 1907 was an unfair period of inquiry, because of the great panic which began in that period, by reason of which, it is claimed that the revenue of the railroad was seriously affected.

By reference to Exhibit 35, however, it appears that the proportion of earnings of these four months, September, October, November and December, 1907, to the total of the fiscal year of which they are a part, is greater than the percentage of the earnings of the same four months of each of the other fiscal years to the total of any such fiscal years involved. That is to say, for the four months of 1907 the earnings were 36.98 per cent. of those for the year, while for 1910 they were 35.75 per cent.; in 1911 they were 36.45 per cent.; in 1912 they were 36.39 per cent.; in 1913 they were 36.21 per cent. and in 1914 they were 35.79 per cent. of the earnings of the year. The earning relations therefore, of the four months of 1907 to the total for the year establishes that those 4 months, as compared with the same four months of the other years were not subnormal as to earnings but actually higher in relation to the annual earnings than were the same months in any one of the five years involved.

At page 29 it is stated that, by rearrangement of the "in transit" freight earnings, or what has been referred to in the recordd as "lap-overs," on the basis indicated in Defendants' Exhibit "U," the Arkansas gross freight earnings in the four months of 1907 would be increased $27,316.22.

Counsel neglected to call attention to Mr. Hamilton's testimony at pages 835 and 836, where he stated that he made a careful investigation of the company's records to determine the facts in connection with this matter, with the result that it was shown that in the four months of 1907 *the intrastate freight in transit amounted to*

only $473.13. This omitted testimony *also shows that the intrastate "lap-overs"* (so-called) "wiped themselves out" in the four months' period, as the witness, in the testimony which is quoted on page 29, said they would do.

It is also stated on this and the following page, that Mr. Douglas followed his formula in September and departed from it in the three months following, *which is the reverse of the facts.*

It has been shown in the record that the figures obtained on the basis of the old, or Douglas, formula were used only as a background for equation. This has been explained at length, and further that these *inconsistencies in the application of the Douglas formula in the one month were carefully corrected before the equation was made.*

It is stated on page 30 that Mr. Hamilton did not dispute the propriety of the formula used by Mr. Douglas but the facts are that he disapproved it, and only used it as a background for the equating process, and counsel admit elsewhere that Mr. Hamilton has condemned Mr. Douglas' basis as *academically* unsound.

At page 45 reference is made to the Plaintiff's Exhibit 58, in which taxes, hire of equipment and value of property are averaged for a series of years. Counsel quote Mr. Hamilton as saying (850):

> "That he does not believe in the exhibit prepared by himself."

This is only a partial quotation and is misleading, as by reference to the testimony (849, 850) it will be seen that he produced this exhibit simply to carry the *hypothetical averaging system used by the defendants,*

relating to earnings and operating expenses, to taxes, hire of equipment and property values. He says (850):

> "I wanted to make the averaging process throughout consistent, so I followed it out to the last detail."

And further:

> "I do not believe in the averaging system but on that system this is what it shows when you carry that system into all of the phases of the proposition."

At page 70 counsel say:

> "Mr. Hamilton attempts to defend the engine ton mile, which he admits is brought back through the equating process (from 1913) to the four months of 1907, by showing it differed but little from the revenue train mile."

This is a partial quotation taken from pages 854 and 855 of the record. At page 878, referring to his testimony on pages 854 and 855, Mr. Hamilton shows that the foregoing statement is based upon a complete misunderstanding of the record. Counsel again refers to this same proposition at page 77 of their brief, and again make the same mistake as appears on page 70, referred to.

Mr. Hamilton compiled the actual engine ton miles for the four months of 1907, and found that there was less than 2 per cent. difference between the engine ton mile relations carried back to the four months of 1907 and those actually found to exist in 1907. (878)

It is implied in the discussion of terminal expenses, at page 24 of defendants' reply brief, and perhaps elsewhere, that no part of train terminal expenses is borne by the mail and express service. This assumption is in error, as is apparent from a consideration of the bases prescribed in the formula (Exhibit No. 1, p. 32) and from Exhibit 12, where such expenses are apportioned as be-

tween mail and express and passenger service. It appears from page 3 of Exhibit 12 that the train terminal expenses were apportioned to mail and express upon the basis of the mail and express car foot mile percentage, which is 20.38 per cent. of the passenger train car foot miles. There is not the slightest evidence in the record to sustain the suggestion that a greater percentage of such expenses should have been charged to the mail and express than is charged in Plaintiff's Exhibit 12, prepared in accordance with the provisions of the formula.

It is erroneously contended in defendants' original brief, pages 45 and 46, that the case at bar falls within the following language used in the Minnesota Rate Case:

> "The showing thus made, of the returns from the combined business, makes it entirely clear that the ultimate conclusion must depend upon the certainty of the proof with respect to the segregation of the results of the intrastate operations."

And it is asserted that

> "if the diminution tables were applied to the earnings where a 3-cent passenger rate and the court tariff were in effect that the road was earning at least 7 per cent."

This statement is without a scintilla of evidence to support it, and is in direct conflict with the unquestioned evidence in the record. The actual receipts from transportation for the four years, 1910 *to* 1913, *include the earnings under* 2½*-cent passenger fares, state and interstate, for* 17 *months and* 3*-cent passenger fares, state and interstate, for* 31 *months of the* 4 *years involved; and intrastate freight revenues for the* 4 *years under freight rates substantially higher than those prescribed in the Arkansas Commission's standard distance tariff No.* 3.

There is in this the same misleading contention that is urged throughout the defendants' brief, that is—to de-

termine the reasonableness of a 2-cent intrastate passenger fare, upon the combined revenues, state and interstate, received under 2½-cent and 3-cent passenger fares. The unfairness of this contention is so patent that mere statement of the facts is sufficient to condemn it.

There is no similarity between the test involved in the Minnesota Rate Case and the test involved in the case at bar. In the case at bar the value is agreed upon and the expenses are apportioned upon the results of a careful test involving every detail of operation.

DEFENDANTS' COMMENTS ON FINDINGS OF THE TRIAL COURT.

At the conclusion of their brief the counsel point out errors which they contend the court made in its findings based on the evidence.

They first call attention to the statement by the court on page 916 of the record that the average value of the property for the four years, 1910 to 1913, inclusive, under the stipulation was $17,924,441.75, and that the gross earnings in the state for the four years was $16,688,486.86. These figures were taken by the court from the first sheet of Exhibit 61, which is a compilation made from exhibits filed by plaintiff, numbered 22, 24, 25 and 26, and based on the stipulation as to value which appears on pages 906-907 of the record, and it is a correct statement of the average stipulated value for the four years. The statement by the court as to the gross earnings is not based on any stipulation, but is the result of averaging the actual earnings shown in Exhibits 22, 24, 25 and 26, which shows the earnings of each one of those years and is undisputed.

The statement by the court that it was shown by the undisputed evidence that the four years referred to

were normal is absolutely correct, and there is not a scintilla of evidence in the record to the contrary. The further statement and finding on the same page that the months of November and December, 1913, were normal is based on the evidence introduced and on Exhibits 34-41, which have been discussed by us in connection with that subject, and the finding is clearly sustained by the evidence.

Counsel say that the court has not understood Mr. Mayer's evidence. We have already called attention at some length to the evidence of that witness, and are unable to find any particular in which the summing up by the court indicates a misunderstanding of the positions taken by him and his evidence in support of his views. A careful reading of Mr. Mayer's evidence, and particularly his statements on cross-examination, will justify the views expressed by the court in regard to it.

It is stated that the court misapprehended the correction of the terminal costs and line costs as made by the state. A reading of the opinion on pages 925 and 926 shows that the court did not misapprehend the bearing of the testimony in either of the aspects pointed out by counsel. This question has been discussed at some length in this brief and we think the finding of the court as to the effect of the correction is not only sustained by the statements of Mr. Simson himself, which are quoted in the opinion, but by all of the evidence introduced on both sides. On pages 927-928 of the opinion, the court says that the result would not differ materially if the figures of the State's accountants were accepted and applied to the intrastate business, although they are made on the basis of net earnings of the entire system. In commenting on this statement counsel say that the court overlooked the fact that the calculations made on the net intrastate earnings were based on the extra costs

of intrastate freight and passenger business developed by the test made in 1913. In other words, the position of counsel is that the court erred in its findings. We would only add to what has heretofore been said in the discussion of the test that if there is any one fact which is completely demonstrated from the practical operations of the road in handling and transporting freight and passengers it is this fact. The result may not be agreeable to counsel, but it represents actual conditions ascertained and developed from day to day. There can be no question, and we submit that it constitutes the very highest degree of evidence that could be produced upon the question as to the comparative cost of conducting the two classes of business.

Counsel, in referring to a statement at page 930 of the opinion in connection with Exhibit "O," that the Douglas Formula was discarded because found to be erroneous, say on page 92 of their brief:

> "Mr. Hamilton admitted many of these errors and criticized not the Dogulas Formula but the Company's Formula for dividing passenger and freight which was used for comparative purposes.
>
> Mr. Hamilton's criticism may also have run to the Formula for assigning to states, but the evidence is not so understood. The point, however, of this reference is merely to show that the court misapprehended the force of the various exhibits based on the old Formula contrasted with the new formula as he evidently believed, as shown by this quotation, that the old Formula was discarded by everyone, and no value could be attached to it, whereas Mr. Hamilton repeatedly stated that there was little difference between it and the new Formula, and evidently his criticisms which the court had in mind were of the Formula used by Mr. Douglas and the railroad for separating passenger and freight, which was only used for their operating comparisons as stated in Exhibit No. 23."

A perusal of the record will show that the court's

opinion, criticized by counsel in the language quoted, is based upon a sound understanding of the facts as disclosed by the record. In order to clear up this entire matter, which seems to have been thoroughly misunderstood by counsel, it will be well to state just what this whole matter relates to.

Prior to the devising of the Formula filed by the plaintiff as Exhibit No. 1, the railroad, for purposes of its own operating comparisons, and of making approximate reports to State Railroad Commissions, had a rough hewn inexpensive Formula for assigning expenses to states, and between freight and passenger services. This has been referred to both as the "Douglas Formula" and the "Old Formula." Counsel now, on page 92 of their brief, adds a new designation, "The Company's Formula." These three Formulae are one and the same and they have no connection with the Formula filed as Exhibit No. 1, and the use made by the plaintiff of the figures compiled under the "Douglas Formula," the "Old Formula," or, as counsel now term it "The Company's Formula" was, as has been explained carefully in connection with Exhibit No. 23, only as a background of comparison, or equation, in carrying the concrete result of the new Formula, filed as Exhibit No. 1, as it was applied in detail in 1913, back to prior periods. In using the results of applying the Old, or Douglas Formula, for purposes of equation, the railroad's accountants discovered that in one month, 1907, Mr. Douglas—the auditor of the railroad, *who had no connection with the preparation of the data under the new Formula*, (filed as Exhibit 1)—had, through error, departed from the text in applying the Formula known as the Douglas or Old Formula. In order that the equating process might be sound, these errors were corrected and application of this old or Douglas Formula

placed upon a uniform basis throughout all of the periods. This is explained in testimony of Mr. Hamilton, which has been quoted elsewhere.

In the quotation from counsel's brief, statement is made, that "Mr. Hamilton repeatedly stated that there was little difference between it (the Old or Douglas Formula) and the new Formula (Exhibit No. 1) and that it appears his criticisms which the court had in mind were of another Formula used by the railroad for separating passenger and freight." Counsel has patently misunderstood this entire proposition. What he speaks of as two Formulae, one for assigning expenses to states and one for separating expenses between freight and passenger, were both embraced in the process known as the "Douglas Formula," the "Old Formula," and now, as counsel designates it for the first time, the "Company's Formula." That Mr. Hamilton did discard the Old or Douglas Formula except as a background or basis for the equation of expenses of prior years to the basis of the new Formula, Exhibit No. 1, is a fact, as is disclosed by the testimony, and, therefore, counsel's whole criticism of the court in this connection is unfounded. We have deemed it necessary to make this rather lengthy explanation as the statement contained in the defendants' brief is calculated to muddy the waters and be misleading.

At page 93 of counsel's brief, reference is made to the court's findings concerning an alleged error of $23,000 in the Memphis Terminal expense, assigned to Arkansas, as set forth in Defendants' Exhibit "G." Counsel neglects to state, as a reference of the record will disclose, that the effect of this correction was to add the amount stated to Arkansas expenses without any accompanying addition to the revenues assigned to Arkansas. Upon testing this matter out, it was found that the

effect of correcting this difference of $23,000 would be insignificant, just as the court is criticised on page 93 of counsel's brief, for stating it would be, and therefore, although this correction if made would have inured to the benefit of the plaintiff's contentions, it was not made on account of its insignificance in effect upon the ultimate result. (840)

On this same page of the brief, counsel refers to Defendants' Exhibits "V," "W" and "X," and makes the statement that "they show errors" to such an extent that the return in the four months of 1907 would be increased to 6.53 per cent.

The court's attention is directed to the discussion of these particular exhibits at pages 225-32, *supra,* and to the quotations from the record in connection therewith, in which it is shown that the matters covered by these exhibits were not errors, but differences of opinion between the state's accountants and the railroad's auditor, as to how certain adjustments of revenue should be made and certain divisions of operating expenses applied.

Exhibit "V" deals solely with revenues for the four months of 1907. In the testimony of Mr. Hamilton (836-840) which is uncontradicted, it is shown that the adjustments of revenue set forth in Exhibit "V" have relation only to the interstate traffic and do not in any way affect the intrastate traffic.

Exhibits "W" and "X" deal entirely with the apportionment of operating expenses to the State of Arkansas, in the four months of 1907, under the Old or Douglas Formula. That all of these matters have been corrected and those corrections reflected in the Plaintiff's Exhibit 27-A is admitted by Mr. Simson at page 716 of the record.

It is apparent, therefore, that after the plaintiff had

filed its Exhibit 27-A, none of these Exhibits, V, W and X, or Exhibit Y, in which they are summarized, had any bearing whatever upon the earnings, expenses, or net return upon the *intrastate* business either freight or passenger in Arkansas. Further confirmation of this is found in the uncontradicted testimony of Mr. Hamilton, which is referred to or quoted (*supra*, 231-2), in connection with the discussion of Defendants' Exhibits Q, R, S, T, U, V, W and X. *The percentages of return quoted by counsel in this connection, apply to the entire business in the State of Arkansas, freight, passenger, intrastate, interstate and mail and express combined.*

These alleged errors on the part of the court are embodied in pages 90 to 93 of defendants' brief. They are either misleading or trivial. None of them rest on any solid foundation, and we respectfully submit that the findings of the court in the particulars referred to and in the result arrived at are sustained by the evidence.

Defendants' Comments on Expert Testimony.

Counsel assume that the case made by plaintiff rests upon expert opinion. That is not the fact. The proof rests upon the formula for dividing operating expenses, charges etc., which has been filed as Exhibit No. 1 in this case. This formula does not need expert opinion to support it, but it does require an intimate knowledge of operating conditions in modern American railway practice. In support of the formula no opinion evidence has, in reality, been used, except the opinion of Mr. Symons in regard to the division of equipment repairs. Reasons in support of it, resting upon a knowledge of operating facts have been given by men who had such knowledge intimately and at first hand. A large number of expert railroad men, expert in the sense of experience in every branch of railroad service, collaborated in the

preparation of this formula, the names and official capacities of these men are listed in the formula.

In previous rate cases, a large retinue of railroad operating witnesses were brought to testify as to their opinions and judgment of the extra costs of conducting intrastate traffic over interstate, and it was this class of testimony that the court, in the Minnesota Rate Cases, had in mind when it held that the carriers proof should rest on an analysis of the facts rather than upon expert opinion. Such an analysis and investigation in minute detail has been made in this case. It is upon the facts so developed that the proof rests, and not upon expert opinion as to the aggregate results of the conduct of any branch of the service. The formula itself is the evidence of the views of the men by whom it was devised and prepared, and, in introducing it plaintiff brought into the case the aggregate knowledge and experience of those men, whose sole purpose in its preparation was to determine what facts would develop the cost of conducting the various classes of traffic, and to devise methods whereby those facts could be ascertained. Their work was done without any knowledge as to the effect it would have in determining the application of rates on any railroad. They dealt with principles only.

All Errors In Assignment of Operating Expenses to Arkansas Eliminated.

In the careful examination made by the accounting representatives of the state, they found some errors in the assignment of operating expenses to Arkansas affecting some of the periods involved, and some errors in the apportionment of interstate revenues to the State of Arkansas. All of these errors, so far as they in the slightest degree affect the return realized by the plaintiff upon the value of its property devoted to to the in-

trastate freight and passenger traffic have been eliminated in the statistics, with one single exception, and that is the error covered by the Defendants' Exhibit G.

The error there disclosed is not applicable to the fiscal year ending June 30, 1913, and was corrected for the four months of 1907. (840) This error relates to transportation expenses only, and in the equation by which the old formula was adjusted to the new 110.59 per cent. of the freight transportation expenses apportioned under the old formula was assigned under the new formula when the percentage should have been 105.22 per cent.; and the proportion of the passenger transportation expenses assigned was 89.32 per cent., when it should have been 85.38 per cent. These are the errors to which attention was called in Defendants' Exhibit G, and the percentages above stated are those shown in this exhibit of defendants, and the accuracy of which was accepted by the plaintiff.

These percentages affect the four months of 1907 and the fiscal years ending June 30, 1910, 1911 and 1912.

In applying the correct percentages in the same manner as the original percentages were applied in the four months of 1907, develops an excess of total freight expenses resulting from the use of the erroneous percentages of $16,977.60, and an excess passenger expense of $6,102.72, or a total excess charge to expenses of $23,080.62. The effect of this overcharge in the total expenses on the intrastate freight and passenger business was worked out by Mr. Hamilton, and his evidence in respect thereto is as follows (840):

> "Taking the change Mr. Simson makes and his reduction of Arkansas operating expenses, $23,080.62, and working that out throughout all the calculations that we have made in our Exhibit 27-A, I find that in so far as the intrastate freight and passenger are concerned the gross earnings shown on that

exhibit still leaves us with insufficient money to pay operating expenses before we come to taxes by $807.23."

The net effect of the change was to reduce the intrastate freight expenses $2,314.09, the intrastate passenger expense $2,373.19 and the total intrastate expense $4,687.28. Carrying these intrastate freight and passenger expense deductions to a balance available for return for the four months ending December 31, 1907, as shown in Exhibit 61, page 6, it results in reducing the deficit for the intrastate freight from $9,308.59 to $6,994.50, and the intrastate passenger deficit from $4,630.31 to $2,257.12, and for the total intrastate business from $13,938.90 to $9,251.62.

The years ending June 30, 1910, 1911 and 1912 are affected in the same manner as are the four months of 1907. Reference is simply made to this fact by Mr. Simson in giving his evidence in support of Exhibit G (611-12), but no computation was made showing the effect of correcting this error. It was thought at the time the correction of this error as to the last four months of the year 1907 was sufficient to demonstrate the want of importance as to all of the other periods involved. However, in order that this court may have the benefit of the application of the correct percentage relations for all of the years affected, we have had computations made correcting such error for the fiscal years ending June 30, 1910, 1911, and 1912. These computations have been made from Exhibits 24, 25 and 26, and the effects on the balance available for a return after making such corrections shown on pages 3, 4, 5 and 6 of Exhibit 61 are as follows:

YEAR ENDING JUNE 30, 1912.

	Intrastate		
	Freight	Passenger	Total
Balance available as return (Exh. 61, page 3) (Deficit)	$27,084.23	$9,870.22	$36,954.45
Reduction of expenses, giving effect to corrected equating percentages, shown in Def. Exh. G	6,077.61	5,850.23	11,927.84
Balance as corrected (Deficit)	$21,006.62	$4,019.99	$25,026.61

YEAR ENDING JUNE 30, 1911.

Balance available as return (Exh. 61, page 4) (Deficit)	$33,316.23	(Surplus) $17,888.18	$15,428.05
Percentage of return (Exh. 61, page 4)	None	1.26%	None
Reduction of expenses, giving effect to corrected equating percentages, shown in Def. Exh. G	6,383.93	5,823.39	12,207.32
Balance as corrected	$26,932.30	(Surplus) $23,711.57	$ 3,220.73
Percentage of return as corrected	None	1.67%	None

YEAR ENDING JUNE 30, 1910.

Balance available as return (Exh. 61, page 5) (Deficit)	(Surplus) $ 4,742.10	$44,195.78	$39,453.68
Percentage of return (Exh. 61, page 5)	0.32%	None	None
Reduction of expenses, giving effect to corrected equating percentages, shown in Def. Exh. G	5,595.17	6,008.79	11,603.96
Balance as corrected (Deficit)	(Surplus) $10,337.27	$38,186.99	$27,849.72
Percentage of return as corrected	0.70%	None	None

The corrections here made are not reflected in the discussion under the title "Return upon the agreed and other values upon the various bases for the different years involved." It can be readily seen, however, that if considered the conclusion as to confiscation would not be affected.

Return Upon the Agreed and Other Values Upon the Various Bases for the Different Years Involved.

Exhibits 22, 24, 25, 26, 27-A, 51 and 61.

There is shown in Exhibits 22, 24, 25, 26 and 27-A the rate of return upon the value of the property as computed by the chief engineer of the Railroad Company,

on the basis of the actual revenues received under the rates in force; and also the return on the value of the property devoted to the intrastate passenger business, on the basis of 2c per passenger per mile for all intrastate transportation. There is also applied the Arkansas Commission's freight rates to the year ending June 30, 1913, but in the other years the return as shown is upon the freight rates actually in force, which were higher, except for the four months of 1907, than the Commission's schedule of freight rates.

There is also included in the expenses charged in Exhibits 22, 24, 25, 26 and 27-A the Kansas City, Ft. Scott and Memphis rental charge, which was eliminated at the suggestion of the court and excluded from Exhibit No. 61.

Exhibit No. 61 shows the return upon the stipulated value of the property, but in computing such return the intrastate freight revenues are reduced for the year ending June 30, 1913, to the basis of the Arkansas schedule, standard distance tariff No. 3. For the four years ending June 30, 1910, to 1913, inclusive, the intrastate passenger revenues are reduced to a 2c passenger fare basis. That is to say, they are computed on the basis that every intrastate passenger paid for each mile he traveled in the state 2c. Exhibit No. 61 is printed as appendix No. 8, and appears at pages 340 to 346.

On sheet No. 1, page 340, there is shown the revenues and expenses summarized for the four years ending June 30, 1910, 1911, 1912 and 1913. At the bottom of sheet No. 1 is shown the average of the four years, compiled at the request of the court to represent an average year of the four.

This is followed by separate sheets, in which there is stated the earnings, expenses, taxes, rentals, hire of

equipment and return upon the value of the property for the years ending June 30, 1910, to 1913, inclusive, and for the four months ending December 31, 1907. The returns on the interstate and intrastate passenger business for an average year of the four years ending June 30, 1913, as shown in this exhibit, is referred to in the opinion of the trial court at pages 926-7 of the record. (222 Fed., 547.) The earnings and expenses of the intrastate freight and passenger business there quoted are drawn directly from Exhibit No. 61. It will be seen by reference to the figures in the court's opinion that the court added back to the average revenues for one year one-fourth of the diminution in revenues which would have been suffered by the plaintiff had the 2c passenger fare statute been in effect. The court, also, under the caption "Operating Expenses," on page 926 of the record, includes, in addition to the operating expenses for an average year of the four shown on the first page of Exhibit 61, the taxes, rentals and hire of equipment.

The returns from the state and interstate business shown in Exhibit No. 61 are not on a comparable basis. This is of great importance in so far as it relates to the passenger traffic. In this exhibit the intrastate passenger revenues are shown as computed on the basis of 2c per mile for all of the periods, while those shown for the interstate are the actual earnings on the basis of the fares collected, which were 2c for the four months of 1907; 2½c for the fiscal year ending June 30, 1910, and from June 30, 1910, to November 26, 1910, and 3c from November 27, 1910, to June 30, 1913.

In addition to this, there is credited as a return from the interstate freight and passenger business a rental credit representing the tolls collected from other carriers for the privilege of being permitted to haul their

traffic over the Memphis bridge, one-half of which is credited to the interstate freight and passenger business of Arkansas. This revenue accrued to the plaintiff by virtue of its ownership of stock and control of the properties of the Kansas City, Ft. Scott and Memphis Railway Company, and by virtue of the ownership by the Kansas City, Ft. Scott and Memphis Railway Company of the stock of the Kansas City & Memphis Railway & Bridge Company. These revenues are, therefore, earnings of the Kansas City & Memphis Railway & Bridge Company from a source wholly independent of the transportation of freight or passengers by the plaintiff, state or interstate, in the State of Arkansas. The bridge tolls collected from other railway companies for the privilege of hauling their traffic over the Memphis Bridge is under a tariff approved by the Secretary of War, and wholly independent of and separate from the earnings accruing under the passenger fares and freight rates, state and interstate, in the State of Arkansas. To make the return from the intrastate and interstate business as shown in Exhibit No. 61, and in all of the other exhibits, comparable, the credit on account of the Memphis Bridge rentals should be eliminated; and so far as Exhibit 61 is concerned the computation should be made for the intrastate passenger business upon the basis of the actual earnings, or the interstate passenger revenue should be reduced to the basis of 2c per mile.

Applying the passenger revenues realized by the plaintiff under the 2½ *and* 3c *intrastate passenger fares, the average return for the four years,* 1910 *to* 1913, *inclusive, upon the stipulated value of the property devoted to the intrastate passenger business for the four years,* 1910 *to* 1913, *inclusive, is* 5.70 *per cent.; whereas the average for the four years on the interstate side, elimi-*

nating the credit accruing to the St. Louis & San Francisco Railroad from the Memphis Bridge for its use by other companies in hauling traffic over same, is 6.92 *per cent.*

In addition to the above, we have computed the rate of return from the intrastate freight and passenger business, apportioning common line maintenance-of-way expenses between freight and passenger on the direct charge basis used by the Interstate Commerce Commission in the Western Passenger Fares Case, *supra* (37 I. C. C., 1), and apportioning maintenance-of-equipment expenses between line and terminal on the basis contended for by the defendants, to wit,—the Simson percentages. Statement in detail of this computation is printed as Appendix No. 10, sheet 3 under the following caption: "Return using direct charge basis for apportioning common line maintenance-of-way expenses between freight and passenger, and defendants' basis for apportioning maintenance-of-equipment expenses between line and terminal," and appearing at page 356.

In making this computation we have used the earnings as they are applied in Exhibit No. 61, with the result that there was a net revenue applicable to a return upon the value of the property assigned to the intrastate freight traffic, for the year ending June 30, 1913, of $17,772.49,—sufficient to yield a return of 1.34 per cent. upon the agreed value of the property assigned to the intrastate freight business.

For the year ending June 30, 1912, there was an operating deficit of $11,852.36 from the intrastate freight business; and for the year ending June 30, 1911, there was an operating deficit of $16,695.81 from the intrastate freight business.

For the year ending June 30, 1910, there was net

operating revenue of $19,672.75 from the intrastate freight business, or sufficient to yield a return upon the agreed value of the property assigned to the intrastate freight traffic of 1.45 per cent.

For the four years combined there was a net operating revenue from the intrastate freight business of $8,897.07, —sufficient to yield a return upon the agreed value of the property devoted to the intrastate freight business of 0.16 per cent.

For an average year of the four years the net operating intrastate freight revenue was $2,224.27, sufficient to yield a return upon the agreed value of the property assigned to the intrastate freight traffic of 0.16 per cent.

For the four months ending December 31, 1907, when the Arkansas Commission's standard distance tariff was in force, there was a net operating deficit of $3,231.37 from the intrastate freight business.

On the passenger side, for the year ending June 30, 1913, there was a net operating deficit from the intrastate passenger traffic of $22,758.92. For the year ending June 30, 1912, there was a net operating income of $1,966.58, sufficient to yield a return of 0.13 per cent. upon the agreed value assigned to the intrastate passenger business.

For the year ending June 30, 1911, there was a net operating income of $29,680.27, sufficient to yield a return of 2.08 per cent. upon the agreed value of the property devoted to the intrastate passenger traffic.

For the year ending June 30, 1910, there was an operating deficit of $31,108.76, from the intrastate passenger traffic.

For the four years combined there was a net operat-

ing deficit of $22,220.83; and for an average year of the four years there was a net operating deficit of $5,555.21.

For the four months ending December 31, 1907, there was a net operating income of $590.69, sufficient to yield a return of 0.11 per cent. upon the agreed value of the property assigned to the intrastate passenger traffic.

Combining the intrastate freight and passenger returns, we find that for the year ending June 30, 1913, there was an operating deficit of $4,986.43; that for the year ending June 30, 1912, there was an operating deficit of $9,885.78; that for the year ending June 30, 1911, there was a net operating income applicable to a return on the value of the property of $12,984.46, sufficient to yield a return on the agreed value of the property assigned to the state traffic of 0.44 per cent.

For the year ending June 30, 1910, there was an operating deficit of $11,436.01; and for the four years combined there was a net operating deficit of $13,323.76; for an average year of the four years there was a net operating deficit of $3,330.94 and for the four months ending December 31, 1907, there was an operating deficit of $2,640.68.

We again call the court's attention to the fact that all of the defendants' exhibits are based on combined state and interstate traffic, and include revenues earned under 2½c passenger fares, state and interstate, for 17 *months of the four years involved, and revenues earned under 3c passenger fares, state and interstate, for* 31 *months of the four years; and intrastate freight revenues for the four years under freight rates substantially* higher than those prescribed in the Arkansas Commission's standard distance tariff No. 3.

The defendants' exhibits, therefore, give no information whatever as to the rate of return that was or might

be earned under a 2c passenger fare, or under the Arkansas Commission's schedule of freight rates. *They destroyed the possiblity of a comparison for the four months ending December* 31, 1907, *by importing into those months a substantial amount of the earnings in the four-year period under the higher intrastate passenger fares and freight rates.*

It is also apparent from an examination of appendix 10, sheet 3, page 356, that the return here stated is not materially affected if line maintenance-of-way expenses be divided between freight and passenger on the direct charge basis employed by the Interstate Commerce Commission and equipment maintenance expenses divided between line and terminal upon the basis of the percentages urged by the defendants and testified to by Mr. Simson.

AGREED VALUE OF PROPERTY ASSIGNABLE TO THE INTRASTATE FREIGHT AND PASSENGER TRAFFIC COMPARED WITH VALUE ON WHICH THE ACTUAL NET INCOME WAS EQUAL TO A 6 PER CENT. AND 7 PER CENT. RETURN, FOR THE YEARS ENDING JUNE 30, 1910, 1911, 1912 AND 1913, AND FOR THE FOUR MONTHS ENDING DECEMBER 31, 1907.

We have compiled and printed as appendix No. 11, page 357, for the information of the court, a statement under the above title. The values used in this computation are those stipulated, and the apportionments between freight and passenger and line and terminal are those made in the plaintiff's exhibits, and carried forward to Exhibit 61. By reference to this appendix, it will be observed that:

The net income from the intrastate freight traffic for the year ending June 30, 1913, was $4,517.64, sufficient to earn a 6 per cent. return upon property of the value

of $75,294; or a 7 per cent. return upon property of the value of $64,537.71. That that part of the agreed value assigned to the intrastate freight traffic for the year ending June 30, 1913, was $1,444,061, or $1,368,767 in excess of the value upon which plaintiff earned a 6 per cent. return, and $1,379,523.29 in excess of that upon which it earned a 7 per cent. return.

That for the year ending June 30, 1913, there was a deficit on the intrastate passenger traffic of $35,332.72, and the assignable proportion of the agreed value of the property devoted to the intrastate passenger business for that year was $2,006,483. Plaintiff received no return whatever upon any part of this value for the year ending June 30, 1913.

For the year ending June 30, 1912, there was a net operating deficit from the intrastate freight traffic of $27,084.23, and the value of the property employed in conducting the intrastate freight business for that year was $1,669,763. Plaintiff received no return whatever on any part of this value.

For the year ending June 30, 1912, there was a net operating deficit from the intrastate passenger traffic of $9,870.22; and the value of the property employed in conducting the intrastate passenger traffic was $1,506,942, upon no part of which did plaintiff receive any return whatever.

In the year ending June 30, 1911, there was a net operating deficit from the intrastate freight traffic of $33,316.23, and the value of the property employed in that year in conducting the intrastate freight business was $1,688.797. Plaintiff received no return whatever on any part of this value for said year.

In the year ending June 30, 1911, there was a net operating income from the intrastate passenger traf-

fic of $17,888.18, sufficient to yield a 6 per cent. return on property of the value of $298,136.33, or a 7 per cent. return upon property of the value of $255,545.43. The value of the property employed in conducting the intrastate passenger business in that year was $1,419,787, or $1,121,650.67 in excess of the value upon which plaintiff earned a 6 per cent. return, and $1,164,241.57 in excess of that on which it earned a 7 per cent. return.

In the year ending June 30, 1910, there was a net operating revenue from the intrastate freight traffic of $4,742.10, sufficient to yield a return of 6 per cent. upon property of the value of $79,035, or a return of 7 per cent. on property of the value of $67,744.29. The agreed value of the property assigned to the intrastate freight traffic in that year was $1,472,150. Computing a return on a 6 per cent. basis, plaintiff received no return on the value of its property employed in the intrastate freight business, in the year 1910 amounting to $1,393,115; and if the return be computed on a 7 per cent. basis amounting to $1,404,405.71.

For the year ending June 30, 1910, there was an operating deficit from the intrastate passenger business of $44,195.78, and the value of the property employed in such traffic in that year was $1,459,701, upon no part of which did plaintiff receive any return in said year.

For the 4 months ending December 31, 1907, there was net operating deficit from the intrastate freight traffic of $9,308.59, and the value of the property employed in conducting the intrastate freight traffic in that period was $1,598,022, on no part of which did plaintiff receive any return.

For the 4 months ending December 31, 1907, there was a net operating deficit from the intrastate passen-

ger business of $4,630.31, and the value of plaintiff's property employed in conducting such intrastate passenger traffic in that period was $1,534,995.

A similar comparison is made in Appendix 10, sheet 1, page 354, with the expenses adjusted as between line and terminal on the basis of the Simson percentages as they appear in Defendants' Exhibit F, and as between freight and passenger by using the so-called direct charge basis of the Interstate Commerce Commission for the apportionment of line maintenance of way expenses, instead of the locomotive ton mile basis, and also by adjusting the equipment values on the basis of the Simson line and terminal percentages. We will not consider this exhibit in detail, but by reference thereto it will be found that there is no material difference between the results there shown and those shown in Appendix 10.

NET INCOME FROM INTRASTATE FREIGHT AND PASSENGER TRAFFIC NECESSARY TO PAY A RETURN OF 6 PER CENT. AND 7 PER CENT. ON VALUE OF PROPERTY EMPLOYED IN INTRASTATE FREIGHT AND PASSENGER BUSINESS, COMPARED WITH NET INCOME EARNED ON THE BASIS APPLIED IN EXHIBIT 61, FOR THE YEARS ENDING JUNE 30, 1910, TO 1913, INCLUSIVE, AND FOR FOUR MONTHS ENDING DECEMBER 31, 1907.

We have prepared for the further information of the court, and printed as Appendix No. 12, page 358, statement showing the value of the property assignable to the intrastate freight and passenger traffic, taken from Exhibit 61, and what the net income should be on these values to yield a 6 per cent. and 7 per cent. return respectively, and we have compared the same with the net income shown in Exhibit 61, and have shown by this comparison the difference between

the actual net income as applied in Exhibit 61, and the net income plaintiff would have earned upon a 6 per cent. and 7 per cent. basis respectively.

Without going through the details of this exhibit, it will be observed that in the year 1913 the plaintiff earned upon the value of the property devoted to the intrastate freight traffic $82,126.02 less than a 6 per cent. return, and $96,566.63 less than a 7 per cent. return; and upon the value of its property devoted to its intrastate passenger traffic, $155,721.70 less than a 6 per cent. return, and $175,786.53 less than a 7 per cent. return; and that upon the combined value of its property employed in conducting the intrastate freight and passenger traffic it earned $237,847.72 less than a 6 per cent. return and $272,353.16 less than a 7 per cent. return.

That in the year ending June 30, 1912, plaintiff earned upon the value of its property devoted to the intrastate freight business $127,270.01 less than a 6 per cent. return, and $143,967.64 less than a 7 per cent. return; that upon the value of its property devoted to its intrastate passenger traffic it earned $100,286.74 less than a 6 per cent. return and $115,356.16 less than a 7 per cent. return; and that upon the value of its property employed in conducting its combined intrastate freight and passenger traffic it earned $227,556.75 less than a 6 per cent. return and $259,323.80 less than a 7 per cent. return.

That in the year ending June 30, 1911, plaintiff earned upon the value of its property devoted to the intrastate freight business $134,644.05 less than a 6 per cent. return, and $151,532.02 less than a 7 per cent. return; that upon the value of its property devoted to its intrastate passenger business it earned $67,299.04 less than a 6 per cent. return and $81,496.91 less than a 7

per cent. return; and that on the value of its property employed in conducting its combined intrastate freight and passenger traffic it earned $201,943.09 less than a 6 per cent. return and $233,028.93 less than a 7 per cent. return.

That in the year ending June 30, 1910, plaintiff earned upon the value of its property devoted to its intrastate freight traffic $83,586.90 less than a 6 per cent. return and $98,308.40 less than a 7 per cent. return; that upon the value of its property devoted to the intrastate passenger business it earned $131,777.84 less than a 6 per cent. return and $146,374.85 less than a 7 per cent. return; and that on the value of its property employed in conducting the combined intrastate freight and passenger business it earned $215,364.74 less than a 6 per cent. return and $244,683.25 less than a 7 per cent. return.

That in the four months ending December 31, 1907, plaintiff earned upon the value of its property devoted to its intrastate freight business $41,269.03 less than a 6 per cent. return and $46,595.77 less than a 7 per cent. return; that upon the value of its property devoted to the intrastate passenger business it earned $35,330.21 less than a 6 per cent. return and $40,446.86 less than a 7 per cent. return; and that on the value of its property employed in conducting the combined intrastate freight and passenger business it earned $76,599.24 less than a 6 per cent. return and $87,042.63 less than a 7 per cent. return.

A similar comparison is made in Appendix 10, sheet 2, page 355 with the expenses adjusted as between line and terminal on the basis of the Simson percentages as they appear in Defendants' Exhibit F, and as between freight and passenger by using the so-called direct-charge basis

of the Interstate Commerce Commission for the apportionment of line maintenance of way expenses, instead of the locomotive ton mile basis, and also by adjusting the equipment values on the basis of the Simson line and terminal percentages. We will not consider this exhibit in detail, but by reference thereto it will be found that there is no material difference between the results there shown and those shown in Appendix 12.

It will be observed from a consideration of Appendix No. 11 that there was employed by plaintiff in each of the periods involved in the conduct of its intrastate freight and passenger business property of enormous values upon which no return whatever was earned, and from Appendix No. 12 that plaintiff received in the four years and four months involved $959,311.54 less than a 6 per cent. return upon the value of its property devoted to the combined intrastate freight and passenger business, and $1,096,431.77 less than a 7 per cent. return on the intrastate freight and passenger business.

We have used for the purpose of these computations 6 per cent. and 7 per cent. respectively, while the trial court found that under the peculiar conditions existing in Arkansas that 7½ per cent. would be a reasonable return for the railway company to earn upon the value of its property devoted to the intrastate business. (927) The rate of return which the trial court found to be reasonable, that is, 7½ per cent., is not challenged by the defendants either in their assignment of errors or in their briefs. The percentages used, therefore, are less favorable to the plaintiff than those found by the trial court.

In Conclusion.

Plaintiff submitted to the trial court the result of an adequate test for a normal period, and applied the cost relations so found in the test period to the four years June 30, 1910, to June 30, 1913, and to the last four months of the calendar year 1907. The investigation was exhaustive; the period normal, and the evidence convincing. The trial court found, upon adequate and satisfactory evidence, every issue in favor of the plaintiff and particularly that the revenues from the intrastate freight and passenger traffic for each and all of the years involved were wholly insufficient to pay necessary operating expenses, taxes, etc., and yield a fair return upon the agreed value of the property employed in the conduct of the intrastate freight and passenger business, and as a result thereof that the Arkansas two-cent passenger fare statute and the Railroad Commission's freight tariff were both confiscatory, violative of the Fourteenth Amendment to the Federal Constitution, and void.

We submit that each and every finding of the trial court is abundantly supported by the evidence, and that its judgment should be affirmed.

Respectfully submitted,

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S. T. Bledsoe,
Attorneys for Appellees.

W. F. Evans,
Of Counsel.

January 5, 1917.

APPENDIX NO. 1.

EXHIBIT NO. 4.

METHOD OF APPORTIONMENT OF REVENUE TO ARKANSAS AND TO FREIGHT AND PASSENGER INTRASTATE, INTERSTATE, AND MAIL AND EXPRESS TRAFFIC.

Freight Revenue.

INTRASTATE FREIGHT REVENUE earned in Arkansas as set forth in Exhibit No. 22, was taken from the records compiled by the railroad in the ordinary keeping of its accounts, with this exception, that while the railroad in preparing the intrastate revenue figures formerly reported to the State Railroad Commission had made an arbitrary adjustment of its gross intrastate revenue in Arkansas on account of undercharge collections, overcharge payments, switching absorptions and kindred items, in preparing the figures shown as intrastate freight revenue in Exhibit No. 22 filed in this case, covering the year ended June 30, 1913, all such adjustments were analyzed and actually applied against the gross earnings covering the actual road haul to which they attached. The arbitrary adjustments, formerly made by the railroad, of overcharges, switching absorptions, undercharges and kindred items, were upon basis of a road mileage prorate (between States) for the railroad as a whole, and a subsequent division of such assignments to states between intrastate and interstate on the basis of the gross intrastate and interstate, directly located, revenues within each state. In the year ended June 30, 1913, the application of this former method, assigned to the State of Arkansas (as shown in the company's regular report to the State Railroad

Commission), intrastate freight revenue amounting to $256,195.32. The reworking of the intrastate freight revenues for the year ended June 30, 1913, on basis of the actual allocation provided for in the formula (Exhibit No. 1) and as hereinbefore explained in detail, resulted in an assignment to Arkansas for the year ended June 30, 1913, of intrastate freight revenue amounting to $259,241.05. The variation in the net result of the two methods of assignment being but a trifle over one per cent.

It was felt that this showing justified the railroad in using, in the preparation, Exhibits Nos. 24, 25, 26, 27, filed in this case, and covering the years ended June 30, 1910, 1911 and 1912, and the four months ended December 31, 1907, the figures representing intrastate freight revenue worked up on its usual basis and reported to the State Railroad Commission without the expenditure of the great amount of time and labor necessary to rework these figures on basis of the formula. In any event, it must be conceded that the change in the revenue figures originally reported to the State Railroad Commission, which would have been brought about by the actual allocation of adjustment items previously referred to, was so small that it would have had no appreciable effect upon the ultimate showing as to the return earned upon the value of the property, in the years prior to that ended June 30, 1913.

The apportionment of INTERSTATE FREIGHT REVENUE assigned to Arkansas for each of the periods shown in Exhibits Nos. 22, 24, 25, 26, 27, was made in the following manner:

For the year ended June 30, 1913, the gross freight revenue accruing to the St. Louis & San Francisco Railroad for the haul of traffic between each station in Arkansas and each station on its line in other states, was tabu-

lated separately, as was also the gross freight revenue accruing to the railroad for its entire haul, between each pair of stations on its line, of traffic which passed entirely through Arkansas *en route,* these tabulations being made from the original revenue records of the railroad. An actual analysis was made of all adjustments of freight revenue, such as overcharges, switching absorptions, undercharges and kindred items, and the results of this analysis, located by separate road hauls between each pair of stations, were deducted from or added to the gross revenues previously set up between each pair of stations as described above, the result being a properly adjusted revenue between each pair of stations for each interstate and transstate separate haul of traffic passing into, out of or through Arkansas. Having so tabulated and adjusted the earnings between each pair of stations, assignment to Arkansas of the total interstate revenue for each separate haul, was made upon the following basis:

Proceeding on the assumption, as indicated by the principle laid down in the formula filed as Exhibit No. 1, that it costs the same per ton for a given terminal or station handling of a ton of intrastate freight, that it does for such handling of a ton of interstate freight, and, further, that it costs the same for the haulage of a ton mile of intrastate freight that it does for a ton mile of interstate freight, and the further assumption, as indicated by the formula, that an allowance of revenue should be made to the states furnishing terminal service to compensate for the cost of such service, and having, in a division of operating expenses, as described in other exhibits filed in the case, determined the cost per ton for terminal service in Arkansas, and the cost per ton mile for line, or haulage, service in Arkansas, of all freight traffic, and the relation of the terminal cost per

ton to the line or haulage cost per ton mile, the terminal cost per ton was reduced to the basis of a cost per ton mile. That is to say, an apportionment of operating expenses based on the test conducted in the months of November and December, 1913, developed that it cost 36.486 cents per ton for terminal service, and .465 cents per ton mile for haulage service in Arkansas during that period. So that the cost of handling one ton in terminal service was equivalent to the cost of hauling a ton 78 miles. Thus, in order to make the revenue allowance described above, to compensate for terminal costs, there was added to the actual road mileage of each separate interstate haul in Arkansas, 78 miles, and to the mileage proportion of such haul in other states, 78 miles, and these equated mileages were used as factors to divide the adjusted earnings tabulated between each pair of stations, as described above.

This process assumes that the average terminal cost, per ton handled, in Arkansas, is closely reflective of the average cost per ton for similar service in the other states in which the St. Louis & San Francisco Railroad operates, and it further assumes that the average haulage cost per ton mile in Arkansas is closely reflective of the average haulage cost per ton mile in the other states in which the St. Louis & San Francisco Railroad operates.

It is not considered that these assumptions are violent, for the reason that operating and traffic density conditions in Arkansas are thoroughly typical of such conditions upon the railroad as a whole.

The earnings derived from TRANSSTATE FREIGHT hauled entirely through Arkansas by the St. Louis & San Francisco Railroad were divided between that state and other states in which the St. Louis & San Francisco Railroad enjoyed a haul, on an equated mileage basis, similar to

that employed in the assignment of interstate freight revenue to Arkansas, with this exception, that the mileage equivalent allowance for terminal cost was added to the actual mileage haul in the states in which the St. Louis & San Francisco Railroad's haul began and terminated, and no such allowance was added to the Arkansas mileage for the reason that such transstate freight had no terminal handling in Arkansas, as such handling is construed in the formula filed as Exhibit No. 1, which defines "Terminal Handling" as the expense of *originating and delivering* freight.

In assigning to Arkansas its proportion of earnings on freight which, by reason of its original point of shipment and ultimate destination was classified as transstate, but which was delivered to or received from a connecting line at a junction within the State of Arkansas, one terminal equivalent allowance, as previously described, was added to the mileage made by such freight on the St. Louis & San Francisco Railroad in Arkansas to compensate for the "terminal" service rendered on such freight at the point where interchanged with the connecting line.

The foregoing under the heading of Interstate and Trans-state Freight describes the assignment of earnings of that character to the State of Arkansas made in the year ended June 30, 1913. Ordinarily, in the past the railroad had made an assignment of interstate and transstate freight revenue to individual states upon a straight mileage prorate basis.

Comparison of the interstate (including transstate) revenues shown in the railroad's report to the State Railroad Commission of Arkansas for the year ended June 30, 1913, with the results obtained on the equated mileage basis hereinbefore described, shows that upon the straight mileage prorate basis the railroad had assigned

to Arkansas interstate and transstate revenue which, in the aggregate, was 99.18 per cent. of the amount that would have been assigned if the equated mileage basis had been employed. It is believed that the application of the equated mileage basis, in detail, to the revenues of the year ended June 30, 1913, and the comparison of the results thereof with the results of the straight mileage prorate formerly used by the railroad, accurately indicates that relation of the results, which would have been obtained by the detailed application of the equated mileage basis in prior years, to the results which were obtained on a straight mileage prorate basis and reported to the Commission in those years. For this reason the Arkansas interstate and transstate freight earnings reported to the State Railroad Commission in prior years have been adjusted on basis of the relationship of the results of the application of the new formula, to the results obtained under the railroad's former method, in the year ended June 30, 1913, and the figures representing interstate (including transstate) freight revenue in Exhibits Nos. 24, 25, 26, 27, have been arrived at on that basis.

Passenger Revenue.

Intrastate and interstate (the latter including transstate) passenger revenues, set up in Exhibits Nos. 22, 24, 25, 26, 27, covering the years ended June 30, 1913, 1912, 1911 and 1910, and the four months ended December 31, 1907, were assigned to Arkansas on the same basis as hereinbefore described for the assignment of freight revenues, with the exception that the adjustments of overcharges, undercharges, etc., were so small in amount (being about one-tenth of one per cent. of total gross passenger revenue assignable to Arkansas in the year ended June 30, 1913), that their analysis in detail

was considered immaterial, and adjustment was made in a lump sum against the ascertained interstate revenue assignable to that state. In figuring the terminal revenue allowance to compensate for terminal cost, for purposes of the assignment to Arkansas, of interstate and transstate revenue in the year ended June 30, 1913, the passenger handled cost, and passenger one mile cost were used in the same manner as the ton handled cost and ton one mile cost in assigning freight revenue; that is to say, an apportionment of operating expenses based on the test conducted in the months of November and December, 1913, developed that it costs 8.677 cents per passenger for terminal service, and 1.242 cents per passenger mile for passenger haulage service, in Arkansas during that period, so that the cost of handling one passenger in terminal service was equivalent to the cost of hauling a passenger seven miles. So in order to make a revenue allowance to compensate for terminal cost, there was added to the actual road mileage of each separate interstate passenger haul in Arkansas, seven miles, and to the mileage proportion of such haul in other states, seven miles, and these equated mileages were used as factors to divide the adjusted earnings tabulated between each pair of stations as is described in the prorate of freight revenue on the preceding pages of this exhibit. The plan followed in assigning transstate passenger revenues to the State of Arkansas was exactly in line with that followed in assigning the transstate freight revenue to Arkansas, with the single difference that the mileage equivalent allowance for terminal cost added to the mileage of other states (no such addition being made to Arkansas mileage of transstate hauls) was seven miles, instead of 78 miles as in the case of freight service.

NOTE: In the assignment hereinafter described of all other revenue accounts, namely:

Excess Baggage,
Mail,
Express,
Other Passenger Train Revenue,
Switch Revenue,
Special Service Train Revenue,
Miscellaneous Transportation Revenue,
Station and Train Privileges,
Parcel Room Receipts,
Storage Freight,
Storage Baggage,
Car Service, and
Miscellaneous Nontransportation Revenue (Interstate Commerce Account No. 19).

The revenues assigned to Arkansas for periods prior to the year ended June 30, 1913, were adjusted on basis of the percentage relationship of the assignment made for the year ended June 30, 1913, under the formula, filed as Exhibit No. 1, to the assignment of such revenues made under the railroad's former method applied in making reports to the State Railroad Commission, with the exception that wherever an actual allocation had been made in the figures reported in prior years to the State Railroad Commission, no such adjustment was necessary, nor was any made, for the reason that the formula filed as Exhibit No. 1 prescribed such actual allocation wherever possible, and such allocations were made of the revenues earned in the year ended June 30, 1913. In some instances the railroad's bases of assignment used in preparing reports to the State Railroad Commission in prior years, were in agreement with that prescribed in the formula, filed as Exhibit No. 1, and no adjustment of the figures reported for these revenues in prior years was necessary, the original figures so reported to the State

Railroad Commission being set up in Exhibits Nos. 24, 25, 26, 27.

The allocations of the various classes of revenues described hereinafter, following this note, all refer to the revenues for the entire year ended June 30, 1913.

Excess Baggage Revenue.

INTRASTATE earnings of this character were assigned to Arkansas direct and INTERSTATE earnings of this character were prorated between interested states, and the Arkansas proportion assigned on a straight mileage basis, the actual haul of each movement of excess baggage governing the classification between State and Interstate and prorate between states.

Parlor and Chair Car Revenue.

The St. Louis & San Francisco Railroad has no earnings of this character.

Mail Revenue.

The earnings from all mail routes located entirely within the State of Arkansas were assigned to that state. The earnings from routes running partly in Arkansas and partly in other states were assigned to Arkansas upon a road mileage prorate of each individual route. No segregation of these earnings was attempted between intrastate and interstate traffic.

Express Revenue.

The express company operating over the St. Louis & San Francisco Railroad had not made any actual assignment of revenues by states for individual railroads, it being its practice to report its total earnings within a given state to the State Railroad Commission or other regulating body in a lump sum, without distinction as to earnings made by it upon lines of individual car-

riers. Lacking information of this character, the express revenue assigned to Arkansas in Exhibits Nos. 22, 24, 25, 26, 27 has been determined on the following basis:

The contract of the St. Louis & San Francisco Railroad with the express company now and previously operating over its line, has carried a guarantee of a minimum payment to the railroad per mile of road operated over by the Express Company. These guarantees vary with individual express routes and are assumed to be relatively indicative of the earnings accruing to the railroad on the various express routes.

These guarantees were applied to the mileage of each route on the entire St. Louis & San Francisco Railroad, and the guarantee earnings for each state determined upon a mileage basis of individual routes wholly or partially within such states. The resultant guarantee earning figures were totaled for the entire railroad and the percentage relation of such guarantee earnings for Arkansas to the total determined. The Arkansas percentage thus obtained was applied to the total actual express earnings of the St. Louis & San Francisco Railroad, and the amounts so obtained set up in Exhibits Nos. 22, 24, 25, 26, 27, as the express earnings of the railroad in the State of Arkansas.

Milk Revenue on Passenger Trains.

The St. Louis & San Francisco Railroad has no earnings of this character.

Other Passenger Train Revenue.

Earnings of this character consist principally of revenue derived from the hauling of special cars in passenger trains. Earnings of this character, when earned entirely within the State of Arkansas, were all credited to that state. When earned partially in Arkansas and partially in other states, assignment was made to Arkansas upon

basis of the road mileage of the haul governing individual items of earnings. The assignment between intrastate and interstate was made upon the basis of the location of the service, each separate item of earnings being analyzed.

Switch Revenue.

All switch revenue earned in Arkansas was credited to that state. The classification of these earnings in Arkansas between intrastate and interstate was made on the basis of road haul to which the switch service attached itself. In analyzing switch revenue collected for other carriers on account of traffic on which the St. Louis & San Francisco Railroad secured no road haul, the records of other carriers were examined, and classification of such earnings between intrastate and interstate was made upon basis of the road haul of the carrier for which the switching was performed. Each individual item of switch earnings was analyzed and classified as above. Debits to this account in the nature of switching paid other companies were classified as between state and interstate in the same manner as is indicated above for switching earned.

Special Service Train Revenue.

Earnings of this character consist of the revenue derived from running chartered trains. East item of earnings of this character was analyzed, and such as were earned entirely within the State of Arkansas were assigned in total to that state. Of such items as were earned partially in Arkansas and partially in other states there was assigned to Arkansas a straight mileage prorate, each individual item being treated separately. Division of these earnings between freight and passenger, and between intrastate and interstate was made upon the basis of actual allocation.

Miscellaneous Transportation Revenue.

Each item of these earnings was analyzed separately. Such items as were earned entirely within the State of Arkansas were credited in total to that state. Of such items as were earned partially in Arkansas and partially in other states, there was assigned to Arkansas a straight mileage prorate. The classification between freight and passenger intrastate and interstate, was made upon the basis of actual allocation. Where items attached themselves to a road haul, the classification between intrastate and interstate freight and passenger was made upon basis of the road haul to which the item attached.

Station and Train Privileges.

STATION PRIVILEGES: Earnings of this character consist principally of revenues from weighing, vending and other automatic machines located at stations, advertising at stations, news privileges at stations and kindred items. Each item of earnings of this character was analyzed separately. All earnings accruing within the State of Arkansas were credited to that state. All of these earnings are properly creditable to the passenger account. The division between intrastate and interstate being impracticable as a matter of actual allocation, it was made on the basis of revenue passenger miles of each class within the State of Arkansas.

TRAIN PRIVILEGES: Earnings of this character are derived from the granting of privileges for the sale of newspapers, fruits, etc., on trains. The payment received by the railroad is based upon a percentage of the receipts of the news company from such sales. It was, therefore, thought that the volume of travel, intrastate and interstate, was a fair basis of division of this revenue as between intrastate and interstate. Earnings of this character for the entire line were divided between states

upon a revenue passenger train mile basis, Arkansas being credited with that proportion of the total earnings which the passenger revenue train miles in that state bore to the total passenger revenue train miles of the entire railroad. It being impracticable to assign this expense actually to intrastate or interstate, such assignment was made upon the basis of revenue passenger miles of each class within the State of Arkansas.

Parcel Room Receipts.

Each item of this character of earnings was analyzed separately, and assignment was made to Arkansas of all earnings actually accruing in that state. Division of earnings of this character, assignable to Arkansas, between intrastate and interstate, was made upon the basis of intrastate and interstate passengers using stations within that state.

In making this division, the number of transstate passengers was excluded from consideration, for the reason that as a usual thing no parcel room earnings are derived, on the St. Louis & San Francisco Railroad, from transstate passengers.

Storage Freight.

All credits to this account were analyzed, each individual item separately. Assignment was made to Arkansas of all such credits covering earnings accruing within that state. Division of these earnings between intrastate and interstate was made upon the basis of the actual road haul of the shipment upon which storage was collected. Some adjustments in the nature of refunds and some collections not definitely locatable to states and as between intrastate and interstate traffic, were assigned to Arkansas, and to intrastate and interstate on the basis of assignment of the locatable credits, as described above.

Storage Baggage.

Each item of earnings of this character was analyzed and such earnings as actually accrued within the State of Arkansas were assigned to that state. An actual division of earnings of this character between intrastate and interstate being impracticable from the railroad's records, such division was made upon the basis of passengers using stations, as described under the head of Parcel Room Receipts.

Car Service.

The same basis of locations of earnings to Arkansas and division between intrastate and interstate, that was employed in assigning earnings from "Storage Freight," was employed in the assignment of car service earnings. Revenues of this character were all credited to freight.

Rental of Buildings and Other Property.

Income of this character was considered as being a proper deduction from rentals of similar character paid, which have been treated in Exhibits Nos. 22, 24, 25, 26, 27, as income charges.

The explanation of the allocation of net rentals to the State of Arkansas and their assignment to the various classes of traffic, is detailed in Exhibit No. 5.

Telegraph and Telephone Service.

The St. Louis & San Francisco Railroad has no earnings of this character.

Miscellaneous (Nontransportation) Earnings.

The designation of this account not being sufficiently descriptive, it should be stated that the earnings credited thereto consist, in the main, of revenues derived from the following sources:

Detouring trains of other lines.

Water furnished locomotives of other lines, on their detoured trains.

Use of wyes, turntables, etc., by other lines.

Commission on meal tickets.

Fees in garnishment suits.

Commissions on premiums collected on indemnity bonds of employees.

Commission on collections of casualty insurance premiums.

Profit on rails and ties sold.

Parking charges on passenger cars of private, or other line, ownership.

Bridge tolls of foot passengers and wagons.

Charges for feeding live stock in transit.

These earnings when accruing entirely within the State of Arkansas were all assigned to that state. Where earned partially in Arkansas and partially in other states, Arkansas was assigned its proper relative mileage proportion. Actual allocation was made between intrastate and interstate wherever possible. As an illustration: In the case of earnings derived from detouring foreign line trains (one of the largest items in the account), if the detour was made entirely within Arkansas, the revenue was considered as intrastate. If the detour was made partially in Arkansas, and partially in another state, the earnings derived therefrom were considered as interstate.

Such items as could not be definitely located to Arkansas or between freight and passenger, intrastate and interstate, were divided under these heads on the same basis as the location of the operating expenses in I. C. C. Accounts Nos. 106 to 116, inclusive, "General Expenses," as described in a subsequent exhibit. The theory on which this latter division was made was that these earn-

ings, with the exception of detouring, which permits of direct allocation, were of such a character that the expense of securing them was practically all included within the "General Expenses" of the railroad.

Joint Facilities Revenue—Dr.

Joint Facilities Revenue—Cr.

The revenue accrued in the credit side of these accounts consisting entirely of amounts received from other carriers, as the St. Louis & San Francisco Railroad's proportion of rentals collected for the use of portions of depots and concessions in depots, in which the St. Louis & San Francisco Railroad is the tenant of another line, and the entries on the debit side of these accounts representing proportions of rental of a similar character paid to other lines by the St. Louis & San Francisco Railroad, where it is the landlord line, have been treated as a proper deduction from rentals paid under the head of "Income Charges," detail of the assignment of which is set forth in a subsequent exhibit.

APPENDIX NO. 2.

EXHIBIT No. 5.

METHOD OF ASSIGNMENT TO ARKANSAS AND APPORTIONMENT BETWEEN FREIGHT AND PASSENGER, INTRASTATE AND INTERSTATE, MAIL AND EXPRESS TRAFFIC, OF TAXES, RENTALS AND HIRE OF EQUIPMENT.

Taxes.

Taxes accrued upon the books of the railroad during each of the periods covered by Exhibits Nos. 22, 24, 25, 26, 27, have been set up therein. The basis of assessment in Arkansas is on value of the physical property, consideration, however, being given to its earning capacity and other items affecting its value as a going concern. The value determined, however, is placed upon the physical property and the tax levy made upon that basis. The apportionment of state tax, therefore, in Exhibits Nos. 22, 24, 25, 26, 27, between freight and passenger, intrastate, interstate, mail and express, has followed the division of the valuation of the property made as prescribed in the formula filled as Exhibit No. 1, and as set forth in Exhibit No. 18.

Federal taxes have been assigned to Arkansas and prorated between the various classes of traffic on the basis provided for in the formula, filed as Exhibit No. 1.

Rentals.

All rentals earned and rentals incurred, as properly accrued and shown on the railroad's books, for the periods covered by Exhibits Nos. 22, 24, 25, 26, 27, have been set up in such exhibits in one lump sum as a net credit for each period (the rental earned in each period

having exceeded the rental charges incurred). The rentals earned by the railroad and treated as set forth herein, consist of items of the following character:

Rental of joint tracks, depots and Memphis and Van Buren bridges. (Interstate Commerce Account "Joint Facilities Rent Income.")

Rentals of buildings and other property. (Interstate Commerce Revenue Account No. 18.)

Proportion accruing to the St. Louis & San Francisco Railroad, of space rental for sundry concessions in joint stations. (Interstate Commerce Revenue Account No. 21.)

The rentals incurred by the railroad, and treated as set forth herein, consist of items of the following character:

Rentals of miscellaneous joint tracks and depots. (Interstate Commerce Account "Joint Facility Rent—Deductions.")

Rental paid for the use of the Kansas City, Fort Scott & Memphis Railway.

All rentals earned or incurred wholly within the State of Arkansas have been credited or charged entirely to that state.

Of rentals earned from, and incurred on account of, tracks and other facilities lying partially in Arkansas and partially in other states, there has been assigned to Arkansas its road mileage proportion, based upon the mileage of each individual track or facility. The apportionment of the debits or credits for rental assigned to the State of Arkansas, as hereinbefore described, was made between freight and passenger, and mail and express on basis of actual use of the rented property or facility wherever possible, and where actual use location was not practicable, such assignment was made on basis of the assignment of operating charges and credits in Inter-

state Commerce Accounts Nos. 22, 23, 51, 52, 77, 78, 104, 105, 115 and 116, these being the joint facility operating debit and credit accounts covering the operating expenses of tracks, facilities, etc., the rentals earned from, or incurred on account of the use of which, were apportioned to Arkansas, as outlined above. These joint facility expense account charges and credits are based upon the use made of each facility by the various classes of service, and reflect such use. Division of these net rentals between intrastate and interstate was made in the case of the freight proportion on basis of respective ton miles of each class, and in the case of the passenger proportion on basis of the respective passenger miles of each class.

One exception to such basis of apportionment of rentals between freight and passenger, intrastate and interstate, and mail and express, was made in the case of rentals earned from the use, by other carriers, of the Memphis bridge. These rentals were divided between freight and passenger on basis of the freight and passenger train mileage made by St. Louis & San Francisco Railroad trains over the bridge and its auxiliary facilities in the State of Arkansas, and the freight and passenger proportions of this rental credit so determined were assigned to interstate traffic. A car-foot mile proportion of the passenger assignment of this credit was allotted to mail and express, based upon the car-foot mileage space, devoted to mail and express in trains passing over the Memphis bridge and its facilities in Arkansas.

Another exception was made in the division of the rentals paid for the use of the Kansas City, Fort Scott & Memphis Railway (Arkansas proportion assigned upon a road mileage basis). The portion of this rental assigned to Arkansas was divided between freight and passenger on basis of the revenue train miles in each class

of services made on the tracks of the Kansas City, Fort Scott & Memphis Railway in Arkansas. The mixed train mileage over the Kansas City, Fort Scott & Memphis Railway in Arkansas was assigned between freight and passenger on basis of the respective freight and passenger gross ton miles in such trains. The freight proportion of this rental was assigned to intrastate and interstate on basis of the respective ton miles of each class hauled over the Kansas City, Fort Scott & Memphis Railway within the State of Arkansas. Of the passenger proportion of this rental charge, a proportion was first assigned to mail and express on basis of the car-foot miles chargeable to mail and express on the Kansas City, Fort Scott & Memphis Railway in Arkansas. The remainder of the passenger proportion of this rental charge was subdivided between intrastate and interstate traffic on basis of the respective passenger miles of each class made upon the Kansas City, Fort Scott & Memphis Railway in Arkansas.

The train mile, car-foot mile, ton mile and passenger mile figures, wherever used in dividing both the Memphis bridge rental credit and Kansas City, Fort Scott & Memphis Railway rental charge, were those obtained by special tests made during the months of November and December, 1913.

(The rental charge above referred to was subsequently eliminated on the direction of the trial court, and the effect of such elimination is shown in Exhibit 28, and such charge is not carried into the income accounts shown in Exhibit 61, or other returns computed in this brief.)

Rentals of buildings and other property (Interstate Commerce Revenue Account No. 18) have been divided between freight and passenger, intrastate and interstate, mail and express, as provided for in the printed formula. (page 7.)

Hire of Equipment.

An analysis of the charges and credits to Hire of Equipment was made from the original vouchers issued in payment of hire of equipment charged and bills rendered for the collection of hire of equipment credits. A complete analysis was made of all records of the railroad underlying these bills and vouchers in order to make the proper segregation of charges and credits between locomotives, passenger train cars, freight cars, Pullman cars and work equipment. Having determined the net hire of equipment debit or credit for each class of equipment as set forth above, for the entire railroad, an assignment of a portion thereof was made to Arkansas upon basis of the mileage made by the respective classes of equipment in that state as compared to the mileage of each class of equipment upon the railroad as a whole. The net hire of equipment charge or credit for freight cars on the one hand, and for passenger and Pullman cars on the other, automatically assign themselves to the freight and passenger service. The net charge or credit of this nature covering locomotives was divided between freight and passenger, work and switch service, on basis of the actual mileage made in Arkansas by each individual locomotive in each class of service. The proportion assigned to locomotives in work service was divided between freight and passenger upon basis of the assignment of maintenance-of-way charges in interstate commerce accounts 2 to 17, inclusive, for the reason, that by far the major portion of work locomotive mileage is made in connection with the maintenance of way and structures. The proportion assigned to switch locomotives in Arkansas was divided between freight and passenger on basis of the time devoted to freight and passenger service at all the yards within the State of Arkansas, as developed by an actual time study. The net

charge or credit of this nature covering mixed train locomotives was divided between freight and passenger upon basis of the respective gross ton miles made for account of each class of service in mixed trains. The net charge or credit of this nature covering work car equipment was divided between freight and passenger on the basis of maintenance-of-way charges as set forth under the head of locomotives in work service.

Having accomplished a division of the hire of equipment charges and credits assignable to the State of Arkansas between freight and passenger service on the bases hereinbefore outlined, the subdivision between intrastate, interstate, mail and express was made for each class of equipment upon basis of the similar subdivision of operating expenses in the respective equipment repair accounts, as described in Exhibit No. 1 and the modifications thereof adopted by the St. Louis & San Francisco Railroad. This being the same basis as was employed for the assignment of equipment values to the various classes of traffic.

EXHIBIT No. 17.

MONTHS OF NOVEMBER AND DECEMBER, 1913. STATEMENT SHOWING THE TOTAL OPERATING EXPENSES OF INTRASTATE, INTERSTATE, FREIGHT AND PASSENGER AND MAIL AND EXPRESS TRAFFIC. ALSO THE EXCESS COST OF INTRASTATE TRAFFIC, FREIGHT AND PASSENGER, SEPARATELY, OVER INTERSTATE TRAFFIC.

	INTRASTATE			INTERSTATE			Mail and Express	Total Expenses
	Passenger	Freight	Total	Passenger	Freight	Total		
Line Passenger Expenses (Exhibit No. 13)	$46,681.83		$ 46,681.83	$76,174.84		$ 76,174.84		
Terminal Passenger Expenses (Exhibit No. 16)	21,381.43		21,381.43	10,451.17		10,451.17		
Line Freight Expenses (Exhibit No. 14)		$12,213.17	12,213.17		$205,065.89	205,065.89		
Terminal Freight Expenses (Exhibit No. 15)		39,274.38	39,274.38		97,947.05	97,947.05		
Line and Terminal Passenger Expenses (Exhibit No. 12)							$35,189.07	
Total	$68,063.26	$51,487.55	$119,550.81	$86,626.01	$303,012.94	$389,638.95	$35,189.07	$544,378.83

EXCESS COST OF INTRASTATE OVER INTERSTATE TRAFFIC

	Passenger One Mile	Operating Expenses	Operating Expenses per Passenger Mile	Tons One Mile	Operating Expenses	Operating Expenses per Ton Mile
			(Cents)			(Cents)
Intrastate	4,012,199	$68,063.26	1.6996	1,815,845	$ 51,487.55	2.8355
Interstate	5,883,225	86,626.01	1.4724	44,837,055	303,012.94	.6758
Excess cost of Intrastate over Interstate—						
Amount			.2272 Cents			2.1597 Cents
Percentage			15.43%			319.58%

APPENDIX NO. 4.

EXHIBIT 21.

APPORTIONMENT OF OPERATING EXPENSES TO ARKANSAS AND DIVISION THEREOF BETWEEN FREIGHT AND PASSENGER, INTRASTATE AND INTERSTATE, MAIL AND EXPRESS.

The operating expenses assignable to the State of Arkansas for the year ended June 30, 1913, and the division thereof between freight and passenger service, were determined in accordance with the provisions of the formula filed as Exhibit No. 1, and the modifications thereof, as set forth therein, adopted by the St. Louis & San Francisco Railroad. (See also explanatory Exhibits Nos. 2 and 3.)

(One exception made in following the basis laid down in Exhibit No. 1 (as modified) was in the adjustment, between the various classes of service, of the nonrevenue service costs. The principle laid down in the formula was followed, but the adjustment of the nonrevenue service costs for the year, was made on the basis of the similar adjustment for the months of November and December, 1913, as set forth in Exhibits Nos. 10 and 11. That is to say, the percentage of burden or relief on account of nonrevenue service performed by one revenue service for the other in November and December, 1913, was applied in making the adjustment of nonrevenue service costs in the operating expenses of the year ended June 30. 1913.)

(Another exception, in detail but not in principle, was that the passenger operating expenses in the five Interstate Commerce Commission groups under the heads

of Maintenance of Way and Structures, Maintenance of Equipment, Traffic Expenses, Transportation Expenses, and General Expenses, determined as hereinbefore set forth, for the year ended June 30, 1913, were divided between passenger, and mail and express on the basis of the relative percentages of car-foot miles in mail and express and passenger carrying service, as determined for the months of November and December, 1913.)

The proportion of passenger expenses chargeable to passenger-carrying service (after elimination of mail and express proportion) were divided between intrastate and interstate passenger traffic on basis of the respective passenger miles of each class for the year ended June 30, 1913, there being added, however, to the intrastate passenger miles 15.43 per cent. in arriving at factors for this division, this percentage representing the excess cost per passenger mile of intrastate passenger traffic over interstate passenger traffic, for all passenger operating expenses in the months of November and December, 1913, as set forth in Exhibit No. 17.

The freight proportion of operating expenses, determined as hereinbefore set forth, was divided between intrastate and interstate on basis of the respective ton miles of each class for the year ended June 30, 1913, there being added, however, to the intrastate ton miles, in arriving at factors for this division, 319.58 per cent., this percentage representing the excess cost per ton mile of intrastate freight traffic over interstate freight traffic, for all freight operating expenses in the months of November and December, 1913, as set forth in Exhibit No. 17.

These calculations which produced the operating expense figures set up in Exhibit No. 22, were as follows:

PASSENGER EXPENSES ASSIGNED TO ARKANSAS AND SUBDIVISION BETWEEN MAIL AND EXPRESS.

	Passenger Proportion (79.62%)	Mail and Express Proportion (20.38%)	Total
Maintenance of Way and Structures	$249,821.67	$ 63,945.81	$ 313,767.48
Maintenance of Equipment	154,274.96	42,194.50	196,469.46*
Traffic Expenses	42,438.11	.....	42,438.11‡
Transportation Expenses	406,001.94	88,473.89	494,475.83†
General Expenses	26,804.32	6,860.99	33,665.31
Total	$879,341.00	$201,475.19	$1,080,816.19

The percentages shown above represent the proportions of car-foot miles devoted to passenger-carrying and mail and express service respectively, in the months of November and December, 1913.

*The car-foot mile percentage shown above (20.38 per cent) was applied to all maintenance-of-equipment expenses except repairs, renewals and depreciation of passenger train cars. By reason of the exclusion of Pullman car-foot mileage from the prorate of these accounts, mail and express was assigned 23.96 per cent.

†In dividing transportation expenses as above, the car-foot percentage (20.38 per cent), chargeable to mail and express, was not applied to station service, the railroad's proportion of wages of joint baggagemen and express messengers, or the wages of train auditors. The mail and express proportion of station expenses was assigned to that service direct on the basis of the time study made by agents in November and December, 1913, and described in Exhibit No. 2. The railroad's proportion of the wages of joint baggagemen and express messengers not being chargeable to mail or express, was assigned direct to passenger, as was also the wages of train auditors.

‡Traffic Expenses: No car-foot mileage elimination was made to charge mail and express, for the reason that no portion of traffic expenses is chargeable to mail and express traffic.

DIVISION OF PASSENGER EXPENSES ASSIGNED TO ARKANSAS (MAIL AND EXPRESS ELIMINATED AS ABOVE) BETWEEN INTRASTATE AND INTERSTATE TRAFFIC.

	Intrastate	Interstate	Total
Passenger one mile, year ended June 30, 1913	14,401,807	30,609,633	45,011,440
Add 15.43% for excess cost	2,222,199		2,222,199
Total	16,624,006	30,609,633	47,233,639
Percentage of each class	35.20%	64.80%	100.00%

	Total	Intrastate Proportion	Interstate Proportion
Passenger Expenses (Mail and Express eliminated)		(35.20%)	(64.80%)
Maintenance of Way and Structures	$249,821.67	$ 87,937.23	$161,884.44
Maintenance of Equipment	154,274.96	54,304.79	99,970.17
Traffic Expenses	42,438.11	14,938.21	27,499.90
Transportation Expenses	406,001.94	143,084.34	262,917.60
General Expenses	26,804.32	9,435.12	17,369.20
Total	$879,341.00	$309,699.69	$569,641.31

DIVISION OF FREIGHT EXPENSES ASSIGNED TO ARKANSAS BETWEEN INTRASTATE AND INTERSTATE TRAFFIC.

	Intrastate	Interstate	Total
Tons one mile, year ended June 30, 1913	9,151,859	317,039,391	326,191,250
Add 319.58% for excess cost	29,247,511		29,247,511
Total	38,399,370	317,039,391	355,438,761
Percentage of each class	10.80%	89.20%	100.00%

Freight Expenses:	Total	Intrastate Proportion (10.80%)	Interstate Proportion (89.20%)
Maintenance of Way and Structures	$ 363,949.37	$ 39,306.53	$ 324,642.84
Maintenance of Equipment	406,760.75	43,930.16	362,830.59
Traffic Expenses	55,764.96	6,022.62	49,742.34
Transportation Expenses	1,117,178.64	119,815.39	997,363.25
General Expenses	92,100.48	9,291.86	82,808.62
Total	$2,035,754.20	$ 218,366.56	$1,817,387.64

Col. ,o. 19).....	$ 19,860.47	$ 27,613.36	$ 47,473.83	$ 146,272.76	$ 40,778.16	$ 187,050.92	$ 17,192.27	$ 251,717.02	
Tota. ..ting Expenses and Above Taxes.....	$ 238,227.03	$ 337,313.05	$ 575,540.08	$ 1,963,660.40	$ 610,419.47	$ 2,574,079.87	$ 218,667.46	$ 3,368,287.41	
Net after deducting expenses and above taxes.....	$ 26,043.72	$ 77,870.94	$ 103,914.66	$ 796,764.44	$ 165,179.94	$ 961,944.38	$ 4,024.11	$ 1,069,883.15	
Federal Income Tax (Exhibit No. 19).....	140.40	420.62	561.02	4,302.64	892.07	5,194.71	21.95	5,777.68	
Net Operating Income.....	$ 25,903.32	$ 77,450.32	$ 103,353.64	$ 792,461.80	$ 164,287.87	$ 956,749.67	$ 4,002.16	$ 1,064,105.47	
Rental Credit (Net) (Exhibit 1, pages 7-A-B-C).....	$ 3,032.79*	$ 27,840.56*	$ 30,873.35*	$ 108,339.09	$ 47,449.40	$ 155,788.49	$ 4,005.30	$ 128,920.44	
Hire of Equipment Credit (Net) (Exhibit No. 20).....	1,680.85*	4,836.41	3,155.56	3,009.18*	4,754.77	1,745.59	2,454.88	7,356.03	
Total Rental and Hire of Equipment Credit (Net)..	$ 4,713.64*	$ 23,004.15*	$ 27,717.79*	$ 105,329.91	$ 52,204.17	$ 157,534.08	$ 6,460.18	$ 136,276.47	
Balance Available as Return on Value of Property.....	$ 21,189.68	$ 54,446.17	$ 75,635.85	$ 897,791.71	$ 216,492.04	$ 1,114,283.75	$ 10,462.34	$ 1,200,381.94	
Value of Property.....	$1,971,627.52	$2,739,523.46	$4,711,150.98	$14,517,549.68	$4,047,717.86	$18,565,267.54	$1,706,902.29	$24,983,320.81	
Percentage of Return.....	1.07%	1.99%	1.61%	6.18%	5.35%	6.00%	.61%	4.80%	
During the year ended June 30, 1913, the St. Louis and San Francisco Railroad charged in Arkansas for the transportation of Intrastate freight the Court Tariff Rates, and for the transportation of passengers, rates based on three cents a mile. If it had charged the freight rates carried in Standard Distance Tariff No. 3, and a flat Intrastate passenger rate of two cents a mile, the Intrastate Freight and Passenger Revenues shown above would have been diminished by the amounts set opposite.....	$ 20,389.53	$ 119,875.02	$ 140,264.55						
Leaving the amounts shown opposite available for return on the value of property.....	$ 800.15	$ 65,428.85*	$ 64,628.70*						

(*) Denotes red figures.

APPENDIX No. 5.

EXHIBIT No. 22.

EARNINGS AND EXPENSES, TAXES, RENTALS, HIRE OF EQUIPMENT, AND RETURN UPON THE VALUE OF THE PROPERTY, FOR THE YEAR ENDED JUNE 30, 1913.

	INTRASTATE			INTERSTATE			Mail and Express	Total Business
	Freight	Passenger	Total	Freight	Passenger	Total		
OPERATING REVENUE:								
Freight	$259,241.05	$.....	$ 259,241.05	$ 2,728,169.36	$.....	$ 2,728,169.36	$.....	$ 2,987,410.41
Passenger	.....	407,911.16	407,911.16	.....	762,300.53	762,300.53	.....	1,170,211.69
Excess baggage	.....	5,077.10	5,077.10	.....	8,521.71	8,521.71	.....	13,598.81
Mail	.....	.....	.....	.....	.....	.....	97,329.22	97,329.22
Express	.....	.....	.....	.....	.....	.....	125,362.35	125,362.35
Other passenger train revenue	.....	424.65	424.65	.....	230.02	230.02	.....	654.67
Switch revenue	125.72*	.....	125.72*	12,557.50	.....	12,557.50	.....	12,431.78
Special service train revenue	650.00	.....	650.00	792.00	135.13	927.13	.....	1,577.13
Misc. transportation revenue	.....	4.00	4.00	7.00	250.55	257.55	.....	261.55
Station and train privileges	.....	822.24	822.24	.....	1,747.27	1,747.27	.....	2,569.51
Parcel room receipts	.....	56.68	56.68	.....	38.07	38.07	.....	94.75
Storage—Freight	517.05	.....	517.05	5,226.61	.....	5,226.61	.....	5,743.66
Storage—Baggage	.....	337.06	337.06	.....	221.69	221.69	.....	558.75
Car service	3,562.67	.....	3,562.67	9,252.86	.....	9,252.86	.....	12,815.53
Miscellaneous	425.70	551.10	976.80	4,419.51	2,154.44	6,573.95	.....	7,550.75
Joint facilities revenue—Dr. (none)	.....	.....	.....	.....	.....	.....	.....	.....
Total Operating Revenue	$264,270.75	$ 415,183.99	$ 679,454.74	$ 2,760,424.84	$ 775,599.41	$ 3,536,024.25	$ 222,691.57	$ 4,438,170.56
OPERATING EXPENSES: (Exhibit No. 21)								
Maint. of way and structures	$ 39,306.53	$ 87,937.23	$ 127,243.76	$ 324,642.84	$ 161,884.44	$ 486,527.28	$ 63,945.81	$ 677,716.85
Maintenance of equipment	43,930.16	54,304.79	98,234.95	362,830.59	99,970.17	462,800.76	42,194.50	603,230.21
Traffic expenses	6,022.62	14,938.21	20,960.83	49,742.34	27,499.90	77,242.24	.....	98,203.07
Transportation expenses	119,815.39	143,084.34	262,899.73	997,363.25	262,917.60	1,260,280.85	88,473.89	1,611,654.47
General expenses	9,291.86	9,435.12	18,726.98	82,808.62	17,369.20	100,177.82	6,860.99	125,765.79
Total Operating Expenses	$ 218,366.56	$ 309,699.69	$ 528,066.25	$ 1,817,387.64	$ 569,641.31	$ 2,387,028.95	$ 201,475.19	$ 3,116,570.39
TAXES (State, Municipal and [illegible] (Exhibit No. [illegible])								

...ting Expenses

APPENDIX NO. 6.

EXHIBIT 23.

EXPLANATION OF THE METHOD EMPLOYED IN ASCERTAINING THE FIGURES FOR EARNINGS AND EXPENSES ASSIGNED TO ARKANSAS, AND TO FREIGHT AND PASSENGER, INTRASTATE AND INTERSTATE, MAIL AND EXPRESS TRAFFIC, IN THE YEARS ENDED JUNE 30, 1912, 1911 AND 1910, AND THE FOUR MONTHS ENDED DECEMBER 31, 1907, AS SET FORTH IN EXHIBITS NOS. 24, 25, 26 AND 27.

The St. Louis & San Francisco Railroad, in preparing the reports required by the Railroad Commission of the State of Arkansas during the years ended June 30, 1913, 1912, 1911 and 1910, used a formula for the allocation of revenues and expenses to that State which was uniformly applied throughout all of those years. It also had in use uniformly throughout all of the years mentioned a formula for the division of expenses between freight and passenger services for purposes of its own operating comparisons.

In order to accomplish a reassignment of earnings and expenses to Arkansas for the years ended June 30, 1912, 1911 and 1910, on basis of the new formula filed as Exhibit No. 1, in the time at the disposal of the railroad, and to avoid the enormous expense incident to reworking all of the voluminous detail, it was felt that a proper showing of Arkansas earnings and expenses divided between the freight and passenger services in the years ended June 30, 1912, 1911 and 1910, might be made by determining the RELATION of the results obtained for the year ended June 30, 1913, from an actual application, to the earnings and expenses of the railroad of the new formula filed as Exhibit No. 1, and the formulas formerly used in making reports to the State Railroad Commis-

sion, and dividing expenses between freight and passenger for purposes of operating comparisons, and by equating the earnings and expenses, reported to the State Railroad Commission and as divided between freight and passenger, on basis of the percentage relation of the results of applying the formula filed as Exhibit No. 1 and the results of applying the Railroad Company's old formula to the earnings and expenses of the year ended June 30, 1913, in minute detail. That is to say, if a comparison of the results obtained under the formula filed as Exhibit No. 1, with the results obtained under the application of the railroad's old formula showed that in the year ended June 30, 1913, the new basis assigned, to Arkansas, or to freight and passenger, on a given item of earnings or expenses, 102 per cent. of the amount assigned for the same item under the old formula, the amount assigned under the old formula in the years ended June 30, 1912, 1911 and 1910, and the four months ended December 31, 1907, has been increased 2 per cent. If, on the other hand, the amount assigned in the year ended June 30, 1913, under the formula filed as Exhibit No. 1 was 98 per cent. of the amount assigned under the old formula in that year, the amount assigned under the old formula in the prior periods was reduced 2 per cent.

It is believed that this process of equation has resulted in a correct reflection of the assignment of earnings and expenses which would have been made to Arkansas, and between freight and passenger services, in the years ended June 30, 1912, 1911 and 1910, if the formula filed as Exhibit No. 1 had been applied thereto in detail.

This equation was applied only to such items as could not be actually allocated to Arkansas, or between freight and passenger, and could only be so allocated by means of a detailed analysis or prorate. Such items as per-

mitted of actual direct allocation without analysis or prorate, were directly allocated in each of the years, namely, intrastate freight and passenger revenues, mail and express earnings, and special service train revenue.

In its report to the State Railroad Commission of Arkansas for the year ended June 30, 1908 (which, of course, included the four months ended December 31, 1907), the railroad had not made any assignment of earnings and expenses to Arkansas, but had reported to the Railroad Commission of that State the earnings and expenses of the entire railroad. In order, therefore, to carry out the plan hereinbefore outlined, it was necessary to assign expenses to Arkansas and between freight and passenger for the four months ended December 31, 1907, on basis of the railroad's old formula used in making such assignments and divisions in the years ended June 30, 1913, 1912, 1911 and 1910. It was then practicable to make the same equation of earnings and expenses for the four months ended December 31, 1907, as was made for the years ended June 30, 1912, 1911 and 1910.

The table on the following page shows the relation of the results of applying the formula filed as Exhibit No. 1, to the results of applying the railroad's old formula, both as to assignment of earnings and expenses to Arkansas, and between freight and passenger for the year ended June 30, 1913.

YEAR ENDED JUNE 30, 1913.

Earnings:	Amount Assigned to Arkansas Under Old Formula and Reported to State R. R. Commission	Amount Assigned to Arkansas as Result of Applying New Formula Filed as Exhibit No. 1	Percentage Relation of Assignment Under New Formula (Ex. No. 1) to Assignment Under Old Formula
Freight—Interstate	$2,705,751.36	$2,728,169.36	100.82%
Freight—Intrastate	256,195.32	259,241.05*	101.19%
Passenger—Interstate	832,775.14	762,300.53	91.51%
Passenger—Intrastate	407,911.16	407,911.16	100.00%
Excess Baggage	13,391.52	13,598.81	101.55%
Mail	97,329.22	97,329.22	100.00%
Express	125,362.35	125,362.35	100.00%
Other Passenger Train Revenue	746.39	654.67	87.71%
Switch Revenue	13,869.76	12,431.78	89.63%
Special Service Train Revenue	900.70	1,577.13	175.10%
Mis. Transportation Rev	245.26	261.55	106.64%
Sta. and Train Privileges	3,080.44	2,569.51	83.41%
Parcel Room Receipts	94.30	94.75	100.48%
Storage Freight	5,101.82	5,743.66	112.58%
Storage Baggage	554.80	558.75	100.71%
Car Service	11,621.48	12,815.53	110.28%
Miscellaneous	8,767.89	7,550.75	86.12%
Total Earnings	$4,483,698.91	$4,438,170.56	98.98%

Operating Expenses (Freight):	Amount Assigned to Arkansas and Reported to State R. R. Commission—Proportion Assigned to Frt. Under Old Formula	Amount Assigned to Arkansas Frt. Service Under New Formula Filed as Exhibit No. 1	Percentage Relation of Assignment Under New Formula (Ex. No. 1) to Assignment Under Old Formula
Maintenance of Way and Structures	$ 322,071.01	$ 363,949.37	113.00%
Maintenance of Equipment	410,250.21	406,760.75	99.15%
Traffic Expenses	56,964.49	55,764.96	97.89%
Transportation Expenses	1,010,166.09	1,117,178.64	110.59%
General Expenses	75,619.25	92,100.48	121.80%
Total	$1,875,071.05	$2,035,754.20	108.57%

*Not equated—original assignment allowed to stand, for reasons given on page 1 of Exhibit No. 4.

YEAR ENDED JUNE 30, 1913.

Operating Expenses (Passenger):	Amount Assigned to Arkansas and Reported to State R. R. Commission—Proportion Assigned to Passenger Under Old Formula	Amount Assigned to Arkansas Passenger Service Under New Formula Filed as Exhibit No. 1	Percentage Relation of Assignment Under New Formula (Ex. No. 1) to Assignment Under Old Formula
Maintenance of Way and Structures	$ 284,123.24	$ 313,767.48	110.43%
Maintenance of Equipment	209,356.92	196,469.46	93.84%
Traffic Expenses	45,031.01	42,438.11	94.24%
Transportation Expenses	553,598.66	494,475.83	89.32%
General Expenses	66,709.48	33,665.31	50.47%
Total	$1,158,819.31	$1,080,816.19	93.27%

The percentages arrived at as shown in the foregoing tables, were used to equate the earnings and expenses of the years ended June 30, 1912, 1911 and 1910, and the four months ended December 31, 1907, as set forth in Exhibits Nos. 24, 25, 26 and 27, with the exception of intrastate freight and passenger earnings, mail and express earnings, and special service train revenues, which, as previously stated herein, were actually allocated under the old formula in all of the periods mentioned and required no equation to put them upon the basis of the provisions of the new formula filed as Exhibit No. 1.

ASSIGNMENT OF EARNINGS TO INTRASTATE AND INTERSTATE, IN THE YEARS ENDED JUNE 30, 1912, 1911 AND 1910, AND THE FOUR MONTHS ENDED DECEMBER 31, 1907.

In the preceding portion of this exhibit, there has been explained the method employed in assigning, to Arkansas, earnings for the periods indicated above on basis of a comparison of the results of applying the railroad's old

formula with the results of applying the new formula filed as Exhibit No. 1, in the year ended June 30, 1913. In allocating to intrastate and interstate the earnings so assigned to Arkansas, the following method has been employed.

The major portion of the earnings were susceptible of actual allocation to intrastate and interstate, or had been so allocated under the railroad's old formula. These consisted of the following:

Freight Revenue.

Passenger Revenue.

Special Service Train Revenue.

The remainder of the earnings could not be allocated to intrastate or interstate without a detailed analysis, and the amounts of these assigned to Arkansas on the basis previously explained in the years ended June 30, 1912, 1911 and 1910, and the four months ended December 31, 1907, were divided between intrastate and interstate on basis of the assignment made as the result of analysis or prorate in accordance with provisions of Exhibit No. 1 in the year ended June 30, 1913. The earnings assigned as above consisted of the following:

Excess Baggage.

Other Passenger Train Revenue.

Switch Revenue.

Station and Train Privileges.

Parcel Room Receipts.

Storage Freight.

Storage Baggage.

Car Service.

Miscellaneous Transportation Revenue.

Miscellaneous Revenue (Nontransportation).

The percentage relations of the assignment of the foregoing earnings, intrastate and interstate, in the

year ended June 30, 1913 (see Exhibit No. 22), were as follows:

	INTRASTATE		INTERSTATE	
	Amount	Per Cent of Total	Amount	Per Cent of Total
Excess Baggage	$5,077.10	37.34%	$ 8,521.71	66.66%
Other Passenger Train Revenue	424.65	64.86%	230.02	35.14%
Switch Revenue	125.72*	1.01%*	12,557.50	101.01%
Station and Train Privileges	822.24	32.00%	1,747.27	68.00%
Parcel Room Receipts	56.68	59.82%	38.07	40.18%
Storage Freight	517.05	9.00%	5,226.61	91.00%
Storage Baggage	337.06	60.32%	221.69	39.68%
Car Service	3,562.67	27.80%	9,252.86	72.20%
Miscellaneous Transportation Revenue:				
Freight Proportion	None		7.00	100.00%
Passenger Proportion	4.00	1.57%	250.55	98.43%
Miscellaneous Nontransportation Revenue:				
Freight Proportion	425.70	8.79%	4,419.51	91.21%
Passenger Proportion	551.10	20.37%	2,154.44	79.63%

*Denotes red figures.

ASSIGNMENT OF EXPENSES TO MAIL AND EXPRESS TRAFFIC IN THE YEARS ENDED JUNE 30, 1912, 1911 AND 1910, AND THE FOUR MONTHS ENDED DECEMBER 31, 1907.

The mail and express traffic of the periods mentioned above was assigned the same percentage proportion of passenger expenses as was assigned to mail and express traffic for the year ended June 30, 1913, as set forth in Exhibit No. 22, as follows:

YEAR ENDED JUNE 30, 1913.

	Straight Passenger Expenses	Mail and Express Expenses	Total Passenger and Mail and Express Expenses	Mail and Exp. Per Cent of Total
Maintenance of Way and Structures	$249,821.67	$63,945.81	$313,767.48	20.38%
Maintenance of Equipment	154,274.96	42,194.50	196,469.46	21.48%
Transportation	406,001.94	88,473.89	494,475.83	17.89%
General	26,804.32	6,860.99	33,665.31	20.38%

ASSIGNMENT BETWEEN INTRASTATE AND INTERSTATE TRAFFIC FOR THE YEARS ENDED JUNE 30, 1912, 1911 AND 1910, AND THE FOUR MONTHS ENDED DECEMBER 31, 1907, OF THE EXPENSES ASSIGNED TO FREIGHT AND PASSENGER SERVICES (AFTER THE ASSIGNMENT TO MAIL AND EXPRESS TRAFFIC OF ITS PROPORTION OF PASSENGER EXPENSES:

This assignment was made in the case of freight on the basis of the ton miles actually hauled in each of the periods mentioned above, with the percentage of extra cost of intrastate business, as determined for the year ended June 30, 1913, added to the intrastate traffic. This percentage of extra cost was determined as follows:

YEAR ENDED JUNE 30, 1913.

Intrastate Freight Expenses (Exhibit No. 22)	$ 218,366.56	
Intrastate Ton Miles	9,151,859	
Cost per Ton Mile (cents)		2.3860
Interstate Freight Expenses (Exhibit No. 22)	1,817,387.64	
Interstate Ton Miles	317,039,391	
Cost per Ton Mile (cents)		.5732
Excess cost of intrastate over interstate:		
Amount (cents)		1.8128
Percentage		316.25%

The same method was employed in the assignment of passenger expenses between intrastate and interstate, the extra cost burden being determined for the year ended June 30, 1913, as follows:

YEAR ENDED JUNE 30, 1913.

Interstate Passenger Expenses (Exhibit No. 22)	$ 309,699.69	
Intrastate Passenger Miles	14,401,807	
Cost per Passenger Mile (cents)		2.1504
Interstate Passenger Expenses (Exhibit No. 22)	569,641.31	
Interstate Passenger Miles	30,609,633	
Cost per Passenger Mile (cents)		1.8610
Excess cost of intrastate over interstate:		
Amount (cents)		.2894
Percentage		15.55%

It will be noted that the percentages of extra cost shown above for the year ended June 30, 1913, vary slightly from those determined for the months of November and December, 1913, as set forth in Exhibit No. 17, and which were applied in the division of expenses for the year ended June 30, 1913. The reason for this difference is that in applying the extra cost percentages determined in the months of November and December, 1913, to the expenses of the year ended June 30, 1913, the expenses of loss and damage freight, and loss and damage baggage, were excluded from consideration, as they were actually allocated as between intrastate and interstate.

APPENDIX No. 7.

EXHIBIT No. 24.

APPORTIONMENT OF TAXES FOR THE YEAR ENDED JUNE 30, 1912, BETWEEN FREIGHT AND PASSENGER INTRASTATE AND INTERSTATE, MAIL AND EXPRESS TRAFFIC.

STATE, MUNICIPAL AND COUNTY TAXES.

The taxes of this character, accruing in Arkansas on the property of the St. Louis and San Francisco Railroad during the year ended June 30, 1912, amounted to $224,900.41.

These taxes have been divided between the various classes of Traffic on basis of the apportionment of value of property (as set forth on page 11 of this Exhibit), as follows:

APPORTIONMENT OF VALUE OF PROPERTY.

	Amount	Percent of Total
Intrastate:		
Freight	$ 2,285,350.00	9.21%
Passenger	2,062,502.00	8.31%
Interstate:		
Freight	15,302,242.00	61.66%
Passenger	3,830,805.00	15.43%
Mail and Express	1,337,083.00	5.39%
Total	$24,817,982.00	100.00%

TAXES APPORTIONED ON FOREGOING PERCENTS.

	Percent	Amount of Taxes
Intrastate:		
Freight	9.21%	$20,713.33
Passenger	8.31%	18,689.23
Interstate:		
Freight	61.66%	138,673.59
Passenger	15.43%	34,702.13
Mail and Express	5.39%	12,122.13
Total	100.00%	$224,900.41

(Continued—1)

EXHIBIT No. 24.

APPORTIONMENT OF TAXES FOR THE YEAR ENDED JUNE 30, 1912, BETWEEN FREIGHT AND PASSENGER INTRASTATE AND INTERSTATE, MAIL AND EXPRESS TRAFFIC.

FEDERAL INCOME TAX.

This assignment was made on basis of the relation of the net earnings assigned to Arkansas on Page 15 of this Exhibit (After deducting operating expenses and State, Municipal and County Taxes) to similar net earnings of the entire line for the same period, as follows:

	Entire Line	Arkansas	Other States
Net Earnings	$11,092,170.07	$962,528.31	$10,129,641.76
Percent of Total	100.00%	8.68%	91.32%
Tax Divided on Above Percents	$ 77,654.70	$ 6,740.43	$ 70,914.27

The Arkansas Proportion of this tax, viz.: 8.68% has been divided between Freight and Passenger, Intrastate, Interstate, and Mail and Express on basis of the net earnings of each class (after deducting State, Municipal and County Taxes), as shown on page 15 of this Exhibit.

This apportionment was made as follows:

	ARKANSAS NET EARNINGS		Arkansas Proportion of Tax
	Amount	Percent of Total	
Intrastate:			
Freight	$ 26,327.33*	2.73%*	$ 184.01*
Passenger	111,143.22	11.54%	777.85
Interstate:			
Freight	646,891.58	67.21%	4,530.24
Passenger	215,942.75	22.43%	1,511.88
Mail and Express	14,878.09	1.55%	104.47
Total	$962,528.31	100.00%	$6,740.43

*Denotes Red Figures.

(Continued—1¼)

EXHIBIT No. 24.

DETAIL OF NET RENTAL CREDIT—(ARKANSAS PROPORTION) FOR THE YEAR ENDED JUNE 30TH, 1912.

	INTRASTATE			INTERSTATE			Mail and Express	Total
	Freight	Passenger	Total	Freight	Passenger	Total		
RENTAL INCOME:								
I. C. C. account No. 18.—Rents of Buildings and Other Property	$ 112.05	$ 3,872.94	$ 3,984.99	$ 1,099.77	$ 2,336.08	$ 3,435.85	$.....	$ 7,420.84
Joint Facilities Rent—Income	340.92	2,338.13	2,679.05	9,512.17	5,014.47	14,526.64	1,882.05	19,087.74
Memphis Bridge Rent—Income	.....	.....	.....	129,400.83	62,238.06	191,638.89	16,167.16	207,806.05
Total—Rental Income	$ 452.97	$ 6,211.07	$ 6,664.04	$140,012.77	$69,588.61	$209,601.38	$18,049.21	$234,314.63
RENTAL DEDUCTIONS:								
Joint Facilities Rent—Deductions	$ 3.05	$ 234.58	$ 237.63	$ 85.01	$ 503.08	$ 588.09	$ 188.81	$ 1,014.53
Joint Facilities Revenue—Debit (I. C. C. Account No. 20)	.....	3.18	3.18	.....	6.76	6.76	.....	9.94
Rental of Kansas City, Fort Scott and Memphis Railway	3,607.79	29,207.95	32,815.74	101,575.59	46,973.46	148,549.05	19,789.12	201,153.91
Total—Rental Deductions	$3,610.84	$29,445.71	$33,056.55	$101,660.60	$47,483.30	$149,143.90	$19,977.93	$202,178.38
Net Rental Credit	*$3,157.87	*$23,234.64	*$26,392.51	$ 38,352.17	$22,105.31	$ 60,457.48	*$ 1,928.72	$ 32,136.25

*Denotes Red Figures.

(Continued—2)

EXHIBIT No. 24.

APPORTIONMENT OF NET DEBIT FOR HIRE OF EQUIPMENT, FOR THE YEAR ENDED JUNE 30TH, 1912, TO ARKANSAS AND BETWEEN FREIGHT AND PASSENGER, INTRASTATE AND INTERSTATE, MAIL AND EXPRESS TRAFFIC.

Assignment was made to Arkansas on the basis provided in the Formula filed as Exhibit No. 1, as follows:

	Entire Line	Arkansas	Arkansas Percent of Total
Locomotive Mileage	25,551,370	2,616,700	10.24%
Freight Train Car Mileage	231,004,643	24,947,514	10.80%
Passenger Train Car Mileage—Pullman	9,967,832	933,940	9.37%
Passenger Train Car Mileage—Other Cars	40,122,263	4,096,030	10.21%
Work Car Mileage	5,851,171	946,149	16.17%

The net credit or debit for Hire of the various classes of equipment for the entire line for the year ended June 30th, 1912, was apportioned on basis of the above percentages, as follows:

	Net Debit Entire Line	Arkansas Percentage	Arkansas Prop'n of Net Debit
Locomotives (Credit)	$ 64,773.89*	10.24%	$ 6,632.85*
Freight Cars	167,416.54	10.80%	18,080.99
Passenger Train Cars—Pullman	35,502.17	9.37%	3,326.55
Passenger Train Cars—Other Cars (Credit)	59,832.09*	10.21%	6,108.86*
Work Cars (Credit)	41,601.04*	16.17%	6,726.89*
Total Net Debit	$ 36,711.69	.....	$ 1,938.94

*Denotes Red Figures.

(Continued—3)

EXHIBIT No. 24.

The Arkansas proportion of Hire of Equipment credit or debit determined as above was divided between Freight and Passenger, Intrastate, Interstate and Mail and Express on basis of the division of Equipment valuation as set forth on page 11 of this Exhibit, as follows:

LOCOMOTIVE CREDIT:

Total locomotive credit was divided between Freight and Passenger on basis of assigned Arkansas valuation as set forth on page 11 of this Exhibit.

	Assigned Value	Percent of Total	Hire of Equipment Credit
Intrastate:			
Freight	$ 87,419.00	7.17%	$ 475.57
Passenger	150,210.00	12.32%	817.17
Interstate:			
Freight	585,232.00	48.00%	3,183.77
Passenger	278,961.00	22.88%	1,517.60
Mail and Express	117,412.00	9.63%	638.74
Total	$1,219,234.00	100.00%	$ 6,632.85

FREIGHT CAR—DEBIT:

Divided as follows:

	Assigned Value	Percent of Total	Hire of Equipment Debit
Intrastate	$ 376,835.00	12.99%	$ 2,348.72
Interstate	2,524,128.00	87.01%	15,732.27
Total	$2,900,963.00	100.00%	$18,080.99

PASSENGER TRAIN CAR—CREDIT:

Divided as follows:

	Assigned Value	Percent of Total	Hire of Equipment Credit
Intrastate	$ 151,483.00	27.49%	$ 764.86
Interstate	281,201.00	51.03%	1,419.81
Mail and Express	118,366.00	21.48%	597.64
Total	$ 551,050.00	100.00%	$ 2,782.31

(Continued—4)

EXHIBIT No. 24.

WORK EQUIPMENT—CREDIT.

Divided as follows:

	Assigned Value	Percent of Total	Hire of Equipment Credit
Intrastate:			
Freight	$ 15,930.00	7.17%	$ 482.32
Passenger	27,372.00	12.32%	828.75
Interstate:			
Freight	106,642.00	48.00%	3,228.91
Passenger	50,833.00	22.88%	1,539.11
Mail and Express	21,395.00	9.63%	647.80
Total	222,172.00	100.00%	$6,726.89

SUMMARY OF ARKANSAS PROPORTION OF NET DEBIT—HIRE OF EQUIPMENT.

	INTRASTATE		INTERSTATE		Mail and Express	Total
	Freight	Passenger	Freight	Passenger		
Locomotives	$ 475.57*	$ 817.17*	$ 3,183.77*	$ 1,517.60*	$ 638.74*	$ 6,632.85*
Freight Cars	2,348.72	.....	15,732.27	.....	.....	18,080.99
Passenger Cars	.....	764.86	.....	1,419.81*	597.64*	2,782.31*
Work Equipment	482.32*	828.75*	3,228.91*	1,539.11*	647.80*	6,726.89*
Total	$ 1,390.83	$ 2,410.78*	$ 9,319.59	$ 4,476.52*	$ 1,884.18*	$ 1,938.94

*Denotes Red Figures.

(Continued—5)

Exhibit No. 24.

THE ORIGINAL COST VALUE OF ROADWAY AND STRUCTURES IN ARKANSAS AS OF JUNE 30, 1912, AS DETERMINED BY THE RAILROAD'S CHIEF ENGINEER, ALSO ASSIGNMENT OF EQUIPMENT VALUES TO ARKANSAS AS OF JUNE 30, 1912. DIVISION OF THE VALUE OF ROADWAY AND STRUCTURES AND EQUIPMENT AS OF JUNE 30, 1912, BETWEEN THE VARIOUS CLASSES OF TRAFFIC FOR YEAR ENDED JUNE 30, 1912.

The original cost of the Roadway and Structures property of which the Railroad stood possessed as of June 30, 1912, was determined by the Railroad's Chief Engineer as $19,924,563.00.

In assigning locomotive values to the State of Arkansas for the year ended June 30, 1913, on the basis of "Value Mileage," it was found (as shown in Exhibit No. 18) that 9.13% of the total value of the Railroad's locomotive equipment was assignable to Arkansas, based upon the value and mileage of locomotives operating in Arkansas during that year. During the year ended June 30, 1913, the actual locomotive mileage run in Arkansas was 9.97% of the total locomotive mileage run upon the entire railroad. During the year ended June 30, 1912, the Arkansas proportion of the total actual locomotive mileage of the entire railroad was 10.24%. It is therefore assumed that if the "Value Mileage" percentage of locomotive values assignable to Arkansas in the year ended June 30, 1913, namely 9.13% be used in assigning locomotive values to Arkansas, in the year ended June 30, 1912, that a *minimum* assignment of locomotive values to Arkansas, in the latter period, will have been made. In justification of this assumption, it should be stated that the Railroad has no regular locomotive assignment to the State of

Arkansas, but moves its locomotives at frequent intervals from one operating division to another, and from State to State, and that the types of locomotives in service in Arkansas are representative and typical of the Railroad's entire locomotive equipment.

For the reasons stated above, therefore 9.13 percent of the book value of all locomotives owned by the Company as of June 30, 1912, has been allotted to Arkansas as the locomotive value properly assignable to that State for the year ended June 30, 1912. The book value of all locomotives owned by the Company as of June 30, 1912, was $13,354,154.00. 9.13 percent of $13,354,-154.00 is $1,219,234.00.

EXHIBIT No. 24.

The total book value of freight train cars owned by the Railroad as of June 30, 1912, was $26,860,764.00. Of this amount there has been assigned to Arkansas a car mile proportion, as follows:

	Arkansas	Other States	Total
Freight Train Car Miles—Year ended June 30, 1912	24,947,514	206,057,129	231,004,643
Percentage of total	10.80%	89.20%	100.00%
Value divided on above percents	$ 2,900,963	$ 23,959,801	$ 26,860,764

The total book value of passenger train cars owned by the railroad as of June 30, 1912, was $5,397,157.00. Of this amount there has been assigned to Arkansas a car mile proportion as follows:

	Arkansas	Other States	Total
Passenger Train Car Miles—Year ended June 30, 1912	4,096,030	36,026,233	40,122,263
Percentage of total	10.21%	89.79%	100.00%
Value divided on above percents	$ 551,050	$ 4,846,107	$ 5,397,157

The total book value of work equipment owned by the railroad as of June 30, 1912, was $1,373,974. Of this amount there has been assigned to Arkansas a work car mile proportion as follows:

(Continued—7)

EXHIBIT No. 24.

	Arkansas	Other States	Total
Work Car Miles—Year ended June 30, 1912	946,149	4,905,022	5,851,171
Percentage of Total	16.17%	83.83%	100.00%
Value divided on above percents	$222,172.00	$1,151,802.00	$1,373,974.00

The total value of equipment assignable to Arkansas for the year ended June 30, 1912, as set forth above is summarized as follows:

Locomotives	$1,219,234.00
Freight Train Cars	2,900,963.00
Passenger Train Cars	551,050.00
Work Equipment	222,172.00
Total	$4,893,419.00

DIVISION OF THE VALUE OF PROPERTY BETWEEN THE VARIOUS CLASSES OF TRAFFIC.

Following the method set forth in Exhibit No. 18 for the division of value of property for the year ended June 30, 1913, the proportion of property value applicable to the business of the year ended June 30, 1912, in Arkansas, as set forth in the preceding pages of this Exhibit, has been divided directly between Freight and Passenger Intrastate and Interstate, and Mail and Express, the value of Roadway and Structures on basis of transportation expenses, and the value of Equipment on basis of equipment Maintenance Expenses, as set forth in the table below: (The expense figures used are those of the year ended June 30, 1912:)

	Amount	Percent of Total
TRANSPORTATION EXPENSES:		
Intrastate—Freight	$ 138,012.83	9.06%
Intrastate—Passenger	132,625.06	8.70%
Interstate—Freight	924,441.57	60.66%
Interstate—Passenger	246,195.44	16.16%
Mail and Express	82,536.82	5.42%
Total	$1,523,811.72	100.00%

(Continued—8)

EXHIBIT No. 24.

	Amount	Percent of Total
LOCOMOTIVE—REPAIRS, RENEWALS AND DEPRECIATION:		
Intrastate—Freight	$ 17,326.55	7.17%
Intrastate—Passenger	29,800.96	12.32%
Interstate—Freight	116,057.18	48.00%
Interstate—Passenger	55,320.31	22.88%
Mail and Express	23,285.85	9.63%
Total	$ 241,790.85	100.00%
FREIGHT TRAIN CARS—REPAIRS, RENEWALS AND DEPRECIATION:		
Intrastate—Freight	$ 26,038.15	12.99%
Interstate—Freight	174,409.47	87.01%
Total	$ 200,447.62	100.00%
PASSENGER TRAIN CARS—REPAIRS, RENEWALS AND DEPRECIATION:		
Intrastate—Passenger	$ 14,319.24	27.49%
Interstate—Passenger	26,581.19	51.03%
Mail and Express	11,188.75	21.48%
Total	$ 52,089.18	100.00%
WORK EQUIPMENT—REPAIRS, RENEWALS AND DEPRECIATION:		
Intrastate—Freight	$ 1,158.82	7.17%
Intrastate—Passenger	1,993.12	12.32%
Interstate—Freight	7,762.03	48.00%
Interstate—Passenger	3,699.89	22.88%
Mail and Express	1,557.38	9.63%
Total	$ 16,171.24	100.00%

The Roadway and Structures value as of June 30, 1912, is, as heretofore stated, $19,924,563.00. The division of this value on basis of transportation expense percentages hereinbefore set forth, has been made as follows:

	Transportation Expense Percentages	Division of Value
Intrastate—Freight	9.06%	$ 1,805,166.00
Intrastate—Passenger	8.70%	1,733,437.00
Interstate—Freight	60.66%	12,086,240.00
Interstate—Passenger	16.16%	3,219,810.00
Mail and Express	5.42%	1,079,910.00
Total	100.00%	$19,924,563.00

(Continued—9)

EXHIBIT No. 24.

The locomotive valuation as of June 30, 1912, amounting to $1,219,234.30, has been divided on basis of locomotive maintenance expense percentages as follows:

	Locomotive Maintenance Expense Percentages	Division of Value
Intrastate:		
Freight	7.17%	$ 87,419.00
Passenger	12.32%	150,210.00
Interstate:		
Freight	48.00%	585,232.00
Passenger	22.88%	278,961.00
Mail and Express	9.63%	117,412.00
Total	100.00%	$1,219,234.00

The value of freight train cars as of June 30, 1912, amounting to $2,900,962.50, has been divided on basis of freight car maintenance expense percentages, as follows:

	Freight Train Car Maintenance Percentages	Division of Value
Intrastate Freight	12.99%	$ 376,835.00
Interstate Freight	87.01%	2,524,128.00
Total	100.00%	$2,900,963.00

The value of passenger train cars as of June 30, 1912, amounting to $551,049.68, has been divided on basis of passenger train car maintenance expense percentages, as follows:

	Passenger Train Car Maintenance Percentages	Division of Value
Intrastate Passenger	27.49%	$ 151,483.00
Interstate Passenger	51.03%	281,201.00
Mail and Express	21.48%	118,366.00
Total	100.00%	$ 551,050.00

(Continued—10)

EXHIBIT No. 24.

The value of work equipment as of June 30, 1912, amounting to $222,171.56, has been divided on basis of work equipment maintenance expense percentages, as follows:

	Work Equipment Maintenance Percentages	Division of Value
Intrastate:		
Freight	7.17%	$ 15,930.00
Passenger	12.32%	27,372.00
Interstate:		
Freight	48.00%	106,642.00
Passenger	22.88%	50,833.00
Mail and Express	9.63%	21,395.00
Total	100.00%	$ 222,172.00

SUMMARY OF ARKANSAS PROPOPTION OF VALUE OF ROADWAY AND STRUCTURES AND EQUIPMENT AS OF JUNE 30, 1912.

	INTRASTATE		INTERSTATE		Mail and Express	Total
	Freight	Passenger	Freight	Passenger		
Roadway and Structures	$1,805,166.00	$1,733,437.00	$12,086,240.00	$3,219,810.00	$1,079,910.00	$19,924,563.00
Locomotives	87,419.00	150,210.00	585,232.00	278,961.00	117,412.00	1,219,234.00
Freight Cars	376.835.00	.....	2,524,128.00	.....	.....	2,900,963.00
Passenger Cars	.....	151,483.00	.....	281,201.00	118,366.00	551,050.00
Work Equipment	15,930.00	27,372.00	106,642.00	50,833.00	21,395.00	222,172.00
Total	$2,285,350.00	$2,062,502.00	$15,302,242.00	$3,830,805.00	$1,337,083.00	$24,817,982.00

(Continued—11)

EXHIBIT No. 24

ASSIGNMENT OF EARNINGS AND EXPENSES TO THE STATE OF ARKANSAS AND TO FREIGHT AND PASSENGER, INTRASTATE AND INTERSTATE AND MAIL AND EXPRESS TRAFFIC, FOR THE YEAR ENDING JUNE 30, 1912.

EARNINGS

ASSIGNMENT TO ARKANSAS AND TO FREIGHT AND PASSENGER AND MAIL AND EXPRESS

These assignments have been made on the basis described on pages 1, 2 and 3 of Exhibit No. 23, as follows:

	Amount Assigned to Arkansas Under Railroad's Old Formula	Percentage Relation of Assignment under New Formula (Ex. No. 1) to Assignment under Railroad's Old Formula (See Exhibit No. 23)	Assignment under Old Formula Equated on Basis of Foregoing Percents Considered as Equivalent to an Assignment in Detail on Basis of New Formula (Ex. No. 1)	DISTRIBUTION OF FOREGOING ASSIGNMENTS		
				Freight	Passenger	Mail and Express
EARNINGS:						
Freight:						
Interstate	$2,419,527.91	100.82%	$2,439,368.04	$2,439,368.04	$.....	$.....
Intrastate	239,506.85	100.00%	239,506.85	239,506.85	.....	.....
Passenger:						
Interstate	851,480.31	91.51%	779,189.63	.....	779,189.63	.....
Intrastate	413,511.60	100.00%	413,511.60	.....	413,511.60	.....
Excess Baggage	13,551.16	101.55%	13,761.20	.....	13,761.20	.....
Mail	96,943.95	100.00%	96,943.95	.....	.....	96,943.95
Express	120,383.28	100.00%	120,383.28	.....	.....	120,383.28
Other Passenger Train Revenue	1,591.96	87.71%	1,396.31	.....	1,396.31	.....
Switch Revenue	13,956.54	89.63%	12,509.25	12,509.25	.....	.....
Special Service Train Revenue	4,909.11	100.00%	4,909.11	4,626.86	282.25	.....
Miscellaneous Transportation Revenue	18.22	106.64%	19.43	** .52	** 18.91	.....
Station and Train Privileges	3,841.30	83.41%	3,204.03	.....	3,204.03	.....
Parcel Room Receipts	14.60	100.48%	14.67	.....	14.67	.....
Storage Freight	4,448.21	112.58%	5,007.79	5,007.79	.....	.....
Storage Baggage	415.05	100.71%	418.00	.....	418.00	.....
Car Service	7,374.48	110.28%	8,132.58	8,132.58	.....	.....
Miscellaneous Non-Transportation Revenue	4,648.62	86.12%	4,003.39	** 2,568.97	** 1,434.42	.....
Total	$4,196,123.15	.....	$4,142,279.11	$2,711,720.86	$1,213,231.02	$217,327.23

**Divided between Freight and Passenger on basis of the actual allocation made for the year ended June 30, 1913.

THIS PAGE VERTICAL

ASSIGNMENT OF ARKANSAS FREIGHT AND PASSENGER EARNINGS TO INTRASTATE AND INTERSTATE
These assignments have been made on the basis described on pages 4 and 5 of Exhibit No. 23, and are as follows:

	FREIGHT					PASSENGER				
		INTRASTATE		INTERSTATE			INTRASTATE		INTERSTATE	
	Total	Percent (See Ex. No. 23)	Amount	Percent (See Ex. No. 23)	Amount	Total	Percent (See Ex. No. 23)	Amount	Percent (See Ex. No. 23)	Amount
EARNINGS:										
Freight:										
Interstate	$2,439,368.04	.....	$.....	100.00%	$2,439,368.04	$.....	.....	$.....	.....	$.....
Intrastate	239,506.85	100.00%	239,506.85	.....	.....	.....	.....	.....	.....	.....
Passenger:										
Interstate	.....	.....	.....	.....	.....	779,189.63	.....	.....	100.00%	779,189.63
Intrastate	.....	.....	.....	.....	.....	413,511.60	100.00%	413,511.60	.....	.....
Excess Baggage	.....	.....	.....	.....	.....	13,761.20	37.34%	5,138.43	62.66%	8,622.77
Other Passenger Train Revenue	.....	.....	.....	.....	.....	1,396.31	64.86%	905.65	35.14%	490.66
Switch Revenue	12,509.25	1.01%*	126.34*	101.01%	12,635.59	.....	.....	.....	.....	.....
Special Service Train Revenue:										
Interstate	1,621.86	.....	.....	100.00%	1,621.86	37.10	.....	.....	100.00%	37.10
Intrastate	3,005.00	100.00%	3,005.00	.....	.....	245.15	100.00%	245.15	.....	.....
Miscellaneous Transportation Revenue	.52	.....	.....	100.00%	.52	18.91	1.57%	.30	98.43%	18.61
Station and Train Privileges	.....	.....	.....	.....	.....	3,204.03	32.00%	1,025.29	68.00%	2,178.74
Parcel Room Receipts	.....	.....	.....	.....	.....	14.67	59.82%	8.78	40.18%	5.89
Storage Freight	5,007.79	9.00%	450.70	91.00%	4,557.09	.....	.....	.....	.....	.....
Storage Baggage	.....	.....	.....	.....	.....	418.00	60.32%	252.14	39.68%	165.86
Car Service	8,132.58	27.80%	2,260.86	72.20%	5,871.72	.....	.....	.....	.....	.....
Miscellaneous Non-Transportation Revenue	2,568.97	8.79%	225.81	91.21%	2,343.16	1,434.42	20.37%	292.19	79.63%	1,142.23
Total	$2,711,720.86	.....	$245,322.88	.....	$2,466,397.98	$1,213,231.02	.....	$421,379.53	.....	$791,851.49

*Denotes Red Figures.

(Continued—12

EXHIBIT No. 24

EXPENSES.

ASSIGNMENT OF EXPENSES TO ARKANSAS AND TO FREIGHT AND PASSENGER.
THESE ASSIGNMENTS HAVE BEEN MADE ON THE BASIS DESCRIBED ON PAGES 3 AND 4 OF EXHIBIT No. 23, AS FOLLOWS:

	Amount Assigned to Arkansas Under Railroad's Old Formula	Percentage Relation of Assignment Under New Formula (Ex. No. 1) to Assignment Under Railroad's Old Formula. (See Exhibit No. 23.)	Assignment Under Old Formula Equated on Basis of Foregoing Percentages—Considered as Equivalent to an Assignment in Detail on Basis of New Formula (Exhibit No. 1.)
OPERATING EXPENSES—FREIGHT:			
Maintenance of Way and Structures	$ 324,407.98	113.00%	$ 366,581.02
Maintenance of Equipment	363,253.33	99.15%	360,165.68
Traffic Expenses	60,813.93	97.89%	59,530.76
Transportation Expenses	960,714.71	110.59%	1,062,454.40
General Expenses	68,175.56	121.80%	83,037.83
Total	$1,777,365.51	.....	$1,931,769.69
OPERATING EXPENSES—PASSENGER: (INCLUDING MAIL AND EXPRESS):			
Maintenance of Way and Structures	$ 278,580.90	110.43%	$ 307,636.89
Maintenance of Equipment	193,839.98	93.84%	181,899.44
Traffic Expenses	45,245.63	94.24%	42,639.48
Transportation Expenses	516,521.85	89.32%	461,357.32
General Expenses	58,544.82	50.47%	29,547.57
Total	$1,092,733.18	.....	$1,023,080.70

ASSIGNMENT TO MAIL AND EXPRESS TRAFFIC OF THE PROPORTION OF ARKANSAS PASSENGER EXPENSES CHARGEABLE THERETO.

THIS ASSIGNMENT HAS BEEN MADE ON THE BASIS DESCRIBED ON PAGE No. 6 OF EXHIBIT No. 23, AS FOLLOWS:

	Passenger Expenses, Including Mail and Express (See Above)	DISTRIBUTION			
		Passenger		Mail and Express	
		Percent	Amount	Percent (See Ex. 23)	Amount
OPERATING EXPENSES—PASSENGER:					
Maintenance of Way and Structures	$ 307,636.89	79.62%	$244,940.49	20.38%	$ 62,696.40
Maintenance of Equipment	181,899.44	78.52%	142,827.44	21.48%	39,072.00
Traffic Expenses	42,639.48	100.00%	42,639.48	.....	.....
Transportation Expenses	461,357.32	82.11%	378,820.50	17.89%	82,536.82
General Expenses	29,547.57	79.62%	23,525.78	20.38%	6,021.79
Total	$1,023,080.70	.....	$832,753.69	.....	$190,327.01

(Continued—13)

EXHIBIT No. 24

ASSIGNMENT OF ARKANSAS FREIGHT EXPENSES (SEE PRECEDING PAGE OF THIS EXHIBIT) BETWEEN INTRASTATE AND INTERSTATE TRAFFIC.

This assignment has been made on the basis described on page 6 of Exhibit No. 23, as follows:

	Intrastate	Interstate	Total
Ton Miles in Arkansas—Year ended June 30, 1912	9,909,882	276,311,939	286,221,821
Add 316.25% to provide for extra cost as determined for year ended June 30th, 1913	31,340,002	.....	31,340,002
Total	41,249,884	276,311,939	317,561,823
Percent of each class to Total	12.99%	87.01%	100.00%

EXPENSES DIVIDED ON ABOVE PERCENTS

OPERATING EXPENSES—FREIGHT:	Total	Intrastate (12.99%)	Interstate (87.01%)
Maintenance of Way and Structures	$ 366,581.02	$ 47,618.87	$ 318,962.15
Maintenance of Equipment	360,165.68	46,785.52	313,380.16
Traffic Expenses	59,530.76	7,733.05	51,797.71
Transportation Expenses	1,062,454.40	138,012.83	924,441.57
General Expenses	83,037.83	10,786.61	72,251.22
Total	$1,931,769.69	$ 250,936.88	$1,680,832.81

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ASSIGNMENT OF ARKANSAS PASSENGER EXPENSES (AFTER THE ELIMINATION OF MAIL AND EXPRESS PROPORTION—SEE PAGE 13 OF THIS EXHIBIT) BETWEEN INTRASTATE AND INTERSTATE TRAFFIC.

This assignment has been made on the basis described on Page 7 of Exhibit No. 23, as follows:

	Intrastate	Interstate	Total
Passenger Miles in Arkansas—Year ended June 30, 1912	14,244,596	30,549,490	44,794,086
Add 15.55% to provide for extra cost as determined for year ended June 30th, 1913	2,215,035		2,215,035
Total	16,459,631	30,549,490	47,009,121
Percent of each class to Total	35.01%	64.99%	100.00%

	EXPENSES DIVIDED ON ABOVE PERCENTS		
	Total	Intrastate (35.01%)	Interstate (64.99%)
OPERATING EXPENSES—PASSENGER (Mail and Express proportion eliminated):			
Maintenance of Way and Structures	$ 244,940.49	$ 85,753.67	$ 159,186.82
Maintenance of Equipment	142,827.44	50,003.89	92,823.55
Traffic Expenses	42,639.48	14,928.08	27,711.40
Transportation Expenses	378,820.50	132,625.06	246,195.44
General Expenses	23,525.78	8,236.38	15,289.40
Total	$ 832,753.69	$ 291,547.08	$ 541,206.61

(Continued—14)

EARNINGS AND EXPENSES, TAXES, RENTALS, HIRE OF EQUIPMENT, AND RETURN UPON THE VALUE OF THE PROPERTY FOR THE FOUR YEARS ENDED JUNE 30TH, 1910, 1911, 1912 AND 1913 IN TOTAL.

	INTRASTATE			INTERSTATE				
	Freight	Passenger	Total	Freight	Passenger	Total	Mail and Express	Total Business
Operating Revenue (Exhibits 22, 24, 25 and 26)	$1,045,182.50	$ 1,634,913.09	$ 2,680,095.59	$10,150,834.01	$ 2,990 732.40	$13,141,566.41	$ 866,806.86	$16,688,468.86
Less—Diminution in Revenue if a Two-cent Passenger Rate and Commission's Tariff Freight Rates had been charged (Exhibits 22, 24, 25 and 26)	20,389.53	435,714.19	456,103.72	.....	.....	.....	.....	456,103.72
Remainder	$1,024,792.97	$ 1,199,198.90	$ 2,223,991.87	$10,150,834.01	$ 2,990,732.40	$13,141,566.41	$ 866,806.86	$16,232,365.14
Operating Expenses (Exhibits 22, 24, 25 and 26)	989,090.43	1,214,032.72	2,203,123.15	7,213,687.26	2,150,017.86	9,363,705.12	770,117.03	12,336,945.30
Net Operating Revenue	$ 35,702.54	$ 14,833.82*	$ 20,868.72	$ 2,937,146.75	$ 840,714.54	$ 3,777,861.29	$ 96,689.83	$ 3,895,419.84
Deductions:								
Taxes (Exhibits 22, 24, 25 and 26)	$ 79,150.63	$ 83,255.94	$ 162,406.57	$ 573,342.39	$ 138,997.99	$ 712,340.38	$ 51,006.45	$ 925,753.40
Rental Credit (Net) (Exhibits 22, 24, 25 and 26)	$ 12,394.36*	$ 98,567.96*	$ 110 962.32*	$ 275,198.14	$ 136,287.88	$ 411 486.02	$ 4,976.94	$ 305,500.64
Add back K. C. F. S. & M. Ry. Rental charge as instructed by the Court	14,462.22	117,083.33	131,545.55	407,177.13	188,298.38	595,475.51	79,326.92	806,347.98
Net Rental Credit	$ 2,067.86	$ 18,515.37	$ 20,583.23	$ 682,375.27	$ 324,586.26	$ 1,006,961.53	$ 84,303.86	$ 1,111,848.62
Hire of Equipment Debit (Net) (Exhibits 22, 24, 25 and 26)	$ 9,760.49	$ 8,063.85*	$ 1,696.64	$ 61,748.60	$ 10,711.78*	$ 51,036.82	$ 4,967.56*	$ 47,765.90
Total Deductions	$ 86,843.26	$ 56,676.72	$ 143,519.98	$ 47,284.28*	$ 196,300.05*	$ 243,584.33*	$ 38,264.97*	$ 138,329.32*
Balance Available as Return on Value of Property	$ 51,140.72*	$ 71,510.54*	$ 122,651.26*	$ 2,984,431.03	$ 1,037,014.59	$ 4,021,445.62	$ 134,954.80	$ 4,033,749.16
Value of Property as per Stipulation	$6,274,771.00	$ 6,392,913.00	$12,667,684.00	$44,389,412.00	$10,657,321.00	$55,046,733.00	$3,983,350.00	$71,697,767.00
Percentage of Return	None	None	None	6.72%	9.73%	7.31%	3.39%	5.63%

EXHIBIT No. 61—Continued

AVERAGE OF THE ABOVE FOUR YEARS' FIGURES, TO REPRESENT AN AVERAGE YEAR OF THE FOUR

	INTRASTATE			INTERSTATE			Mail and Express	Total Business
	Freight	Passenger	Total	Freight	Passenger	Total		
Operating Revenue (Less Diminutions)	$ 256,198.24	$ 299,799.73	$ 555,997.97	$ 2,537,708.50	$ 747,683.10	$ 3,285,391.60	$ 216,701.71	$ 4,058,091.28
Operating Expenses	247,272.61	303,508.18	550,780.79	1,803,421.82	537,504.46	2,340,926.28	192,529.26	3,084,236.33
Net Operating Revenue	$ 8,925.63	$ 3,708.45*	$ 5,217.18	$ 734,286.68	$ 210,178.64	$ 944,465.32	$ 24,172.45	$ 973,854.95
Total Deductions (Taxes, Rentals and Hire of Equipment)	21,710.81	14,169.18	35,879.99	11,821.07*	49,075.01*	60,896.08*	9,566.24*	34,582.33*
Balance Available as Return on Value of Property	$ 12,785.18*	$ 17,877.63*	$ 30,662.81*	$ 746,107.75	$ 259,253.65	$ 1,005,361.40	$ 33,738.69	$ 1,008,437.28
Value of Property as per Stipulation	$1,568,692.75	$ 1,598,228.25	$ 3,166,921.00	$11,097,353.00	$ 2,664,330.25	$13,761,683.25	$ 995,887.50	$17,924,441.75
Percentage of Return	None	None	None	6.72%	9.73%	7.31%	3.39%	5.63%

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*Denotes Red Figures.

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EARNINGS AND EXPENSES, TAXES, RENTALS, HIRE OF EQUIPMENT AND RETURN UPON THE VALUE OF THE PROPERTY FOR THE YEAR ENDED JUNE 30TH, 1913

	INTRASTATE			INTERSTATE			Mail and Express	Total Business
	Freight	Passenger	Total	Freight	Passenger	Total		
Operating Revenue (Exhibit 22)	$ 264,270.75	$ 415,183.99	$ 679,454.74	$ 2,760,424.84	$ 775,599.41	$ 3,536,024.25	$ 222,691.57	$ 4,438,170.56
Less Diminution in Revenue if a Two-Cent Passenger Rate and Commission Tariff Freight Rates had been charged (Exhibit 22).	20,389.53	119,875.02	140,264.55	.....	.....	.....	.....	140,264.55
Remainder	$ 243,881.22	$ 295,308.97	$ 539,190.19	$ 2,760,424.84	$ 775,599.41	$ 3,536,024.25	$ 222,691.57	$ 4,297,906.01
Operating Expenses (Exhibit 22)	218,366.56	309,699.69	528,066.25	1,817,387.64	569,641.31	2 387,028.95	201,475.19	3,116,570.39
Net Operating Revenue	$ 25,514.66	$ 14,390.72*	$ 11,123.94	$ 943,037.20	$ 205,958.10	$ 1,148,995.30	$ 21,216.38	$ 1,181,335.62
Deductions:								
Taxes (Exhibit 22)	$ 20,000.87	$ 28,033.98	$ 48,034.85	$ 150,575.40	$ 41,670.23	$ 192,245.63	$ 17,214.22	$ 257,494.70
Rental Credit (Net) (Exhibit No. 22)	$ 3,032.79*	$ 27,840.56*	$ 30,873.35*	$ 108,339.09	$ 47,449.40	$ 155,788.49	$ 4,005.30	$ 128,920.44
Add back K. C. F. S. & M. Ry. Rental Charge as Instructed by the Court (Exhibit 20-A)	3,717.49	30,096.13	33,813.62	104,664.42	48,401.88	153,066.30	20 390.90	207,270.82
Net Rental Credit	$ 684.70	$ 2,255.57	$ 2,940.27	$ 213,003.51	$ 95,851.28	$ 308,854.79	$ 24,396.20	$ 336,191.26
Hire of Equipment Credit (Net) (Exhibit 22)	$ 1,680.85*	$ 4,836.41	$ 3,155.56	$ 3,009.18*	$ 4,754.77	$ 1,745.59	$ 2,454.88	$ 7,356.03
Total Deductions	$ 20,997.02	$ 20,942.00	$ 41,939.02	$ 59,418.93*	$ 58,935.82*	$ 118,354.75*	$ 9,636.86*	$ 86,052.59*
Balance Available as Return on Value of Property.	$ 4,517.64	$ 35,332.72*	$ 30,815.08*	$ 1,002,456.13	$ 264,893.92	$ 1,267,350.05	$ 30,853.24	$ 1,267,388.21
Value of Property as per Stipulation	$1,444,061.00	$2,006,483.00	$3,450,544.00	$10,632.951.00	$2,964,631.00	$13,597,582.00	$1,250,170.00	$18,298,296.00
Percentage of Return	0.31%	None	None	9.43%	8.94%	9.32%	2.47%	6.93%

*Denotes Red Figures.

(Continued—2)

EXHIBIT No. 61

EARNINGS AND EXPENSES, TAXES, RENTALS, HIRE OF EQUIPMENT AND RETURN UPON THE VALUE OF THE PROPERTY FOR THE YEAR ENDED JUNE 30TH, 1912

	INTRASTATE			INTERSTATE			Mail and Express	Total Business
	Freight	Passenger	Total	Freight	Passenger	Total		
Operating Revenue (Exhibit 24)	$ 245,322.88	$ 421,379.53	$ 666,702.41	$ 2,466,397.98	$ 791,851.49	$ 3,258,249.47	$ 217,327.23	$ 4,142,279.11
Less Diminution in Revenue if a Two-cent Passenger Rate had been charged (Exhibit 24)		128,619.68	128,619.68					128,619.68
Remainder	$ 245,322.88	$ 292,759.85	$ 538,082.73	$ 2,466,397.98	$ 791,851.49	$ 3,258,249.47	$ 217,327.23	$ 4,013,659.43
Operating Expenses (Exhibit 24)	250,936.88	291,547.08	542,483.96	$ 1,680,832.81	541,206.61	2,222,039.42	190,327.01	2,954,850.39
Net Operating Revenue	$ 5,614.00*	$ 1,212.77	$ 4,401.23*	$ 785,565.17	$ 250,644.88	$ 1,036,210.05	$ 27,000.22	$ 1,058,809.04
Deductions:								
Taxes (Exhibit 24)	$ 20,529.32	$ 19,467.08	$ 39,996.40	$ 143,203.83	$ 36,214.01	$ 179,417.84	$ 12,226.60	$ 231,640.84
Rental Credit (Net) Exhibit 24)	$ 3,157.87*	$ 23,234.64*	$ 26,392.51*	$ 38,352.17	$ 22,105.31	$ 60,457.48	$ 1,928.72*	$ 32,136.25
Add back K. C. F. S. & M. Ry. Rental Charge as Instructed by the Court (Exhibit 24, Page 2)	3,607.79	29,207.95	32,815.74	101,575.59	46,973.46	148,549.05	19,789.12	201,153.91
Net Rental Credit	$ 449.92	$ 5,973.31	$ 6,423.23	$ 139,927.76	$ 69,078.77	$ 209,006.53	$ 17,860.40	$ 233,290.16
Hire of Equipment Debit (Net) (Exhibit 24)	$ 1,390.83	$ 2,410.78*	$ 1,019.95*	$ 9,319.59	$ 4,476.52*	$ 4,843.07	$ 1,884.18*	$ 1,938.94
Total Deductions	$ 21,470.23	$ 11,082.99	$ 32,553.22	$ 12,595.66	$ 37,341.28*	$ 24,745.62*	$ 7,517.98*	$ 289.62
Balance Available as Return on Value of Property	$ 27,084.23*	$ 9,870.22*	$ 36,954.45*	$ 772,969.51	$ 287,986.16	$ 1,060,955.67	$ 34,518.20	$ 1,058,519.42
Value of Property as per Stipulation	$1,669,763.00	$1,506,942.00	$3,176,705.00	$11,180,397.00	$2,798,931.00	$13,979,328.00	$ 976,923.00	$18,132,956.00
Percentage of Return	None	None	None	6.91%	10.29%	7.59%	3.53%	5.83%

During the year ended June 30th, 1912, the St. Louis and San Francisco Railroad charged in Arkansas for the transportation of Intrastate Freight, the "COURT TARIFF RATES" which were higher than the rates carried in Standard Distance Tariff No. 3. Figures as to the diminution of revenue which would have resulted from the application of Standard Distance Tariff No. 3 Rates in this year have not been compiled, but are not considered material in as much as the Court Tariff Rates did not yield sufficient to pay the operating expenses, taxes, rentals and hire of equipment, chargeable to Intrastate Freight Traffic.

(Continued—3)

*Denotes Red Figures.

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EXHIBIT No. 61

EARNINGS AND EXPENSES, TAXES, RENTALS, HIRE OF EQUIPMENT AND RETURN UPON THE VALUE OF THE PROPERTY FOR THE YEAR ENDED JUNE 30TH, 1911

	INTRASTATE			INTERSTATE			Mail and Express	Total Business
	Freight	Passenger	Total	Freight	Passenger	Total		
Operating Revenue (Exhibit 25)	$ 263,094.10	$ 435,863.70	$ 698,957.80	$ 2,500,249.20	$ 761,781.43	$ 3,262,030.63	$ 217,929.08	$ 4,178,917.51
Less Diminution in Revenue if a Two-cent Passenger Rate had been charged (Exhibit 25)	.....	115,958.62	115,958.62	.....	.....	.....	.....	115,958.62
Remainder	$ 263,094.10	$ 319,905.08	$ 582,999.18	$ 2,500,249.20	$ 761,781.43	$ 3,262,030.63	$ 217,929.08	$ 4,062,958.89
Operating Expenses (Exhibit 25)	273,812.51	290,445.38	564,257.89	1,837,309.40	510,783.23	2,348,092.63	182,715.48	3,095,066.00
Net Operating Revenue	$ 10,718.41*	$ 29,459.70	$ 18,741.29	$ 662,939.80	$ 250,998.20	$ 913,938.00	$ 35,213.60	$ 967,892.89
Deductions:								
Taxes (Exhibit 25)	$ 21,279.44	$ 18,499.96	$ 39,779.40	$ 145,655.02	$ 32,524.18	$ 178,179.20	$ 11,323.78	$ 229,282.38
Rental Credit (Net) (Exhibit 25)	$ 3,236.19*	$ 24,292.65*	$ 27,528.84*	$ 76,859.53	$ 40,051.14	$ 116,910.67	$ 2,644.25	$ 92,026.08
Add back K. C. F. S. & M. Ry. Rental Charge as instructed by the Court (Exhibit 25)	3,706.00	30,003.07	33,709.07	104,340.77	48,252.21	152,592.98	20,327.84	206,629.89
Net Rental Credit	$ 469.81	$ 5,710.42	$ 6,180.23	$ 181,200.30	$ 88,303.35	$ 269,503.65	$ 22,972.09	$ 298,655.97
Hire of Equipment Debit (Net) (Exhibit 25)	$ 1,788.19	$ 1,218.02*	$ 570.17	$ 11,999.74	$ 2,141.36*	$ 9,858.38	$ 919.06*	$ 9,509.49
Total Deductions	$ 22,597.82	$ 11,571.52	$ 34,169.34	$ 23,545.54*	$ 57,920.53*	$ 81,446.07*	$ 12,567.37*	$ 59,864.10*
Balance Available as Return on Value of Property	$ 33,316.23*	$ 17,888.18	$ 15,428.05*	$ 686,485.34	$ 308,918.73	$ 995,404.07	$ 47,780.97	$ 1,027,756.99
Value of Property as per Stipulation	$1,688,797.00	$1,419,787.00	$3,108,584.00	$11,328,083.00	$2,498,210.00	$13,826,293.00	$ 886,132.00	$17,821,009.00
Percentage of Return	None	1.26%	None	6.06%	12.36%	7.20%	5.39%	5.77%

During the year ended June 30th, 1911, the St. Louis and San Francisco Railroad charged in Arkansas for the transportation of Intrastate Freight, the "COURT TARIFF RATES" which were higher than the rates carried in Standard Distance Tariff No. 3. Figures as to the diminution of revenue which would have resulted from the application of rates carried in Standard Distance Tariff No. 3 in this year have not been compiled, but are not considered material in as much as the Court Tariff Rates did not yield sufficient to pay the Operating Expenses, Taxes, Rentals and Hire of Equipment chargeable to Intrastate Freight Traffic.

*Denotes Red Figures.

(Continued—4)

EXHIBIT No. 61

EARNINGS AND EXPENSES, TAXES, RENTALS, HIRE OF EQUIPMENT AND RETURN UPON THE VALUE OF THE PROPERTY FOR THE YEAR ENDED JUNE 30TH, 1910

	INTRASTATE			INTERSTATE			Mail and Express	Total Business
	Freight	Passenger	Total	Freight	Passenger	Total		
Operating Revenue (Exhibit 26)	$ 272,494.77	$ 362,485.87	$ 634.980.64	$ 2,423,761.99	$ 661,500.07	$ 3,085,262.06	$ 208,858.98	$ 3,929,101.68
Less Diminution in Revenue if a Two-cent Passenger Rate had been charged (Exhibit 26)		71 260.87	71 260.87					71,260.87
Remainder	$ 272,494.77	$ 291,225.00	$ 563,719.77	$ 2,423,761.99	$ 661,500.07	$ 3,085,262.06	$ 208,858.98	$ 3,857,840.81
Operating Expenses (Exhibit 26)	245,974.48	322,340.57	568,315.05	1,878,157.41	528,386.71	2,406,544.12	195,599.35	3,170,458.52
Net Operating Revenue	$ 26,520.29	$ 31,115.57*	$ 4,595.28*	$ 545,604.58	$ 133,113.36	$ 678,717.94	$ 13,259.63	$ 687,382.29
Deductions:								
Taxes (Exhibit 26)	$ 17,341.00	$ 17,254.92	$ 34,595.92	$ 133,908.14	28,589.57	$ 162,497.71	$ 10,241.85	$ 207,335.48
Rental Credit (Net) (Exhibit 26)	$ 2,967.51*	$ 23,200.11*	$ 26,167.62*	$ 51,647.35	$ 26,682.03	$ 78,329.38	$ 256.11	$ 52,417.87
Add back K. C. F. S. & M. Ry. Rental Charge as Instructed by the Court (Exhibit 26)	3,430.94	27,776.18	31,207.12	96,596.35	44,670.83	141,267.18	18,819.06	191,293.36
Net Rental Credit	$ 463.43	$ 4,576.07	$ 5,039.50	$ 148,243.70	$ 71,352.86	$ 219 596.56	$ 19,075.17	$ 243,711.23
Hire of Equipment Debit (Net) (Exhibit 26)	$ 4,900.62	$ 401.36	$ 5,301.98	$ 37,420.09	$ 660.87	$ 38,080.96	$ 290.56	$ 43,673.50
Total Deductions	$ 21,778.19	$ 13,080.21	$ 34,858.40	$ 23,084.53	$ 42,102.42*	$ 19,017.89*	$ 8,542.76*	$ 7,297.75
Balance Available as Return on Value of Property	$ 4,742.10	$ 44,195.78*	$ 39,453.68*	$ 522,520.05	$ 175,215.78	$ 697,735.83	$ 21,802.39	$ 680,084.54
Value of Property as per Stipulation	$1,472,150.00	$1,459,701.00	$2,931,851.00	$11,247,981.00	$2,395,549.00	$13,643,530.00	$ 870,125.00	$17,445,506.00
Percentage of Return	0.32%	None	None	4.64%	7.31%	5.11%	2.51%	3.90%

During the year ended June 30th, 1910, the St. Louis and San Francisco Railroad charged in Arkansas for the transportation of Intrastate Freight, the "COURT TARIFF RATES," which were higher than the rates carried in Standard Distance Tariff No. 3. Figures showing the diminution of revenue which would have resulted from the application of Standard Distance Tariff No. 3 have nor been compiled, but are not considered material in as much as the "COURT TARIFF" rates yielded only an amount sufficient to pay Operating Expenses, Taxes, Rentals and Hire of Equipment, and a return of THIRTY-TWO ONE HUNDREDTHS (32-100) OF ONE PER CENT on the value of the property devoted to Intrastate Freight Traffic.

*Denotes Red Figures.

(Continued—5)

EXHIBIT No. 61

EARNINGS AND EXPENSES, TAXES, RENTALS, HIRE OF EQUIPMENT AND RETURN UPON THE VALUE OF THE PROPERTY FOR THE FOUR MONTHS ENDED DECEMBER 31ST, 1907

	INTRASTATE			INTERSTATE			Mail and Express	Total Business
	Freight	Passenger	Total	Freight	Passenger	Total		
Operating Revenue (Exhibit 27-A)	$ 96,041.67	$ 127,178.76	$ 223,220.43	$ 790,258.42	$ 155,905.10	$ 946,163.52	$ 76,602.34	$ 1,245,986.29
Operating Expenses (Exhibit 27-A)	100,118.93	128,596.01	228,714.94	634,429.38	142,932.73	777,362.11	62,706.63	1,068,783.68
Net Operating Revenue (Exhibit 27-A)	$ 4,077.26*	$ 1,417.25*	$ 5,494.51*	$ 155,829.04	$ 12,972.37	$ 168,801.41	$ 13,895.71	$ 177,202.61
Deductions: Taxes (Exhibit 27-A)	$ 4,610.00	$ 4,429.00	$ 9,039.00	$ 29,220.00	$ 4,922.00	$ 34,142.00	$ 2,101.00	$ 45,282.00
Rental Credit (Net) (Exhibit 27-A)	$ 1,185.84*	$ 9,196.79*	$ 10,382.63*	$ 29,961.05	$ 15,118.40	$ 45,079.45	$ 1,370.96	$ 36,067.78
Add Back K. C. F. S. & M. Ry. Rental Charge as instructed by the Court (Page 2, Exhibit 27-A)	$ 1,331.89	$ 10,782.71	$ 12,114.60	$ 37,498.71	$ 17,341.21	$ 54,839.92	$ 7,305.56	$ 74,260.08
Net Rental Credit	$ 146.05	$ 1,585.92	$ 1,731.97	$ 67,459.76	$ 32,459.61	$ 99,919.37	$ 8,676.52	$ 110,327.86
Hire of Equipment Debit (Net) (Exhibit 27-A)	$ 767.38	$ 369.98	$ 1,137.36	$ 4,862.36	$ 411.12	$ 5,273.48	$ 213.64	$ 6,624.48
Total Deductions	$ 5,231.33	$ 3,213.06	$ 8,444.39	$ 33,377.40*	$ 27,126.49*	$ 60,503.89*	$ 6,361.88*	$ 58,421.38*
Balance Available as Return on Value of Property	$ 9,308.59*	$ 4,630.31*	$ 13,938.90*	$ 189,206.44	$ 40,098.86	$ 229,305.30	$ 20,257.59	$ 235,623.99
One-Third of Value of Property as per Stipulation	$ 532,674.00	$ 511,665.00	$1,044,339.00	$ 3,375,428.00	$ 568,472.00	$ 3,943,900.00	$ 242,540.00	$ 5,230,779.00
Percentage of Return	None	None	None	5.61%	7.05%	5.81%	8.35%	4.50%

*Denotes Red Figures.

(Concluded—6)

APPENDIX No. 9

COMPARISON OF RETURNS ON VALUE OF PROPERTY WITH EQUIPMENT REPAIRS APPORTIONED BETWEEN LINE AND TERMINAL SERVICE ON VARIOUS BASES.

Balance available as Return on Value of Property and Percentage of Return for Intrastate Freight and Passenger business, resulting from the application of the percentages determined by the General Managers of the Western Lines for the division of Locomotive and Freight and Passenger Car Repairs between Line and Terminal Service, compared with the results of applying (1) the Line and Terminal percentages determined by Mr. Symons in his Exhibits 43 and 46, and (2) similar percentages determined by Mr. Simson in his Exhibit "F," Page 3:

YEAR ENDED JUNE 30TH, 1913.

	On Basis of Gen. Mgrs. Percentages (Exh. 61, Page 2)	On Basis of Symons Percentages (Results found in Exh. 51, P. 2, Carried to Exh. 61, P. 2)	On Basis of Simson's Percentages (Compiled from data in the Record)
INTRASTATE FREIGHT:			
Balance available as return (surplus)	$4,517.64	$1,470.81	$19,890.65
Percentage of Return	0.31%	0.10%	1.38%
INTRASTATE PASSENGER:			
Balance available as return (deficit)	$35,332.72	$31,554.79	$37,748.38
Percentage of return	None	None	None
INTRASTATE FREIGHT AND PASSENGER COMBINED:			
Balance available as return (deficit)	$30,815.08	$30,083.98	$17,857.73
Percentage of return	None	None	None

YEAR ENDED JUNE 30TH, 1912.

	On Basis of Gen. Mgrs. Percentages (Exh. 61, Page 3)	On Basis of Symons Percentages (Results found in Exh. 51, P. 2, Carried to Exh. 61, P. 3)	On Basis of Simson's Percentages (Compiled from data in the Record)
INTRASTATE FREIGHT:			
Balance available as return (deficit)	$27,084.23	$30,561.42	$ 9,418.27
Percentage of return	None	None	None
INTRASTATE PASSENGER:			
Balance available as return (deficit)	$ 9,870.22	$ 6,372.64	$12,144.29
Percentage of return	None	None	None
INTRASTATE FREIGHT AND PASSENGER COMBINED:			
Balance available as return (deficit)	$36,954.45	$36,934.06	$21,562.56
Percentage of return	None	None	None

YEAR ENDED JUNE 30TH, 1911.

	On Basis of Gen. Mgrs. Percentages (Exh. 61, Page 4)	On Basis of Symons Percentages (Results found in Exh. 51, P. 2, Carried to Exh. 61, P. 4)	On Basis of Simson's Percentages (Compiled from data in the Record)
INTRASTATE FREIGHT:			
Balance available as return (deficit)	$33,316.23	$37,116.25	$14,039.83
Percentage of return	None	None	None
INTRASTATE PASSENGER:			
Balance available as return (surplus)	$17,888.18	$21,333.47	$15,622.71
Percentage of return	1.26%	1.50%	1.10%
INTRASTATE FREIGHT AND PASSENGER COMBINED:			(Surplus)
Balance available as return (deficit)	$15,428.05	$15,782.78	$ 1,582.88
Percentage of return	None	None	0.05%

YEAR ENDED JUNE 30, 1910.

	On Basis of Gen. Mgrs. Percentages (Exh. 61, Page 5)	On Basis of Symons Percentages (Results found in Exh. 51, P. 2, Carried to Exh. 61, Page 5)	On Basis of Simson's Percentages (Compiled from data in the Record)
INTRASTATE FREIGHT:			
Balance available as return (surplus)	$ 4,742.10	$ 1,343.50	$22,058.70
Percentage of return	0.32%	0.09%	1.50%
INTRASTATE PASSENGER:			
Balance available as return (deficit)	$44,195.78	$40,452.58	$46,710.04
Percentage of return	None	None	None
INTRASTATE FREIGHT AND PASSENGER COMBINED:			
Balance available as return (deficit)	$39,453.68	$39,109.08	$24,651.34
Percentage of return	None	None	None

FOUR MONTHS ENDED DEC. 31, 1907.

	On Basis of Gen. Mgrs. Percentages (Exh. 61, Page 6)	On Basis of Symons Percentages (Results found in Exh. 51, P. 2, Carried to Exh. 61, Page 6)	On Basis of Simson's Percentages (Compiled from data in the Record)
INTRASTATE FREIGHT:			
Balance available as return (deficit)	$ 9,308.59	$10,630.78	$ 2,260.22
Percentage of return	None	None	None
INTRASTATE PASSENGER:			
Balance available as return (deficit)	$ 4,630.31	$ 3,354.13	$ 5,633.36
Percentage of return	None	None	None
INTRASTATE FREIGHT AND PASSENGER COMBINED:			
Balance available as return (deficit)	$13,938.90	$13,984.91	$ 7,893.58
Percentage of return	None	None	None

FOUR YEARS ENDED JUNE 30, 1913, 1912, 1911 AND 1910 COMBINED.

	On Basis of Gen. Mgrs. Percentages (Exh. 61, Page 1)	On Basis of Symons Percentages (Results found in Exh. 51, P. 2, Carried to Exh. 61, Page 1)	On Basis of Simson's Percentages (Compiled from data in the Record)
INTRASTATE FREIGHT:			(Surplus)
Balance available as return (deficit)	$51,140.72	$64,863.36	$18,491.25
Percentage of return	None	None	0.29%
INTRASTATE PASSENGER:			
Balance available as return (deficit)	$71,510.54	$57,046.54	$80,980.00
Percentage of return	None	None	None
INTRASTATE FREIGHT AND PASSENGER COMBINED:			
Balance available as return (deficit)	$122,651.26	$121,909.90	$62,488.75
Percentage of return	None	None	None

AVERAGE OF THE ABOVE FOUR YEARS' FIGURES TO REPRESENT AN AVERAGE YEAR OF THE FOUR.

	On Basis of Gen. Mgrs. Percentages (Exh. 61, Page 1)	On Basis of Symons Percentages (Results found in Exh. 51, P. 2, Carried to Exh. 61, Page 1)	On Basis of Simson's Percentages (Compiled from data in the Record)
INTRASTATE FREIGHT:			
Balance available as return (deficit)	$12,785.18	$16,215.84	$ 4,622.81 (Surplus)
Percentage of return	None	None	0.29%
INTRASTATE PASSENGER:			
Balance available as return (deficit)	$17,877.63	$14,261.63	$20,245.00
Percentage of return	None	None	None
INTRASTATE FREIGHT AND PASSENGER COMBINED:			
Balance available as return (deficit)	$30,662.81	$30,477.47	$15,622.19
Percentage of return	None	None	None

In connection with the Balance available as return (on the basis of Simson's percents) in the amount of $18,491.25 for Intrastate Freight for the combined four years ended June 30, 1913, 1912, 1911 and 1910, it should be stated that in three of the years, namely, 1912, 1911 and 1910, the Intrastate Freight Revenues were based on Court Tariff rates, which were higher than the rates carried in Standard Distance Tariff No. 3. Figures as to the diminution of revenue which would have resulted from the application of Standard Distance Tariff No. 3 rates in those years were not compiled—see foot notes on pages 3, 4 and 5 of Exhibit 61, covering the years ended June 30, 1912, 1911 and 1910.

APPENDIX No. 10—Sheet 1.

In the following tables there is reflected a re-assignment of the expenses giving effect to the percentages determined by Mr. Simson, in defendant's Exhibit "F" for the division of Equipment Repairs between line and terminal service, and the so-called "direct charge" basis (i. e., assigned charges in Accounts 80 to 89, omitting Account 81), used by the Interstate Commerce Commission in the Western Passenger Fares Case, for the division of Maintenance of Way Expenses between the freight and passenger services; also a re-assignment of the Equipment Values, which were affected by the re-assignment of Equipment Repairs, the apportionment of Equipment Values having followed the apportionment of Equipment Repairs.

VALUE OF PROPERTY ASSIGNABLE TO INTRASTATE FREIGHT AND PASSENGER TRAFFIC COMPARED WITH THE VALUE ON WHICH THE ACTUAL NET INCOME WAS EQUAL TO 6% AND 7%, YEARS ENDING JUNE 30, 1913, 1912, 1911, AND 1910, AND FOR THE FOUR MONTHS ENDING DECEMBER 31, 1907.

Year Ending June 30th		Actual Net Income	Value on which the Actual Net Income was Equal to		Value of Property Assignable to Intrastate Traffic	Value Devoted to Intrastate Traffic on which no Return was Earned Whatever	
			6%	7%		6%	7%
1913	Intrastate Freight Traffic	$ 17,772.49	$ 296,208.17	$ 253,892.71	$1,326,658.84	$1,030,450.67	$1,072,766.13
	Intrastate Passenger Traffic	*22,758.92	.....	.....	2,014,508.93	2,014,508.93	2,014,508.93
1912	Intrastate Freight Traffic	$ *11,852.36	.....	.....	$1,534,011.27	$1,534,011.27	$1,534,011.27
	Intrastate Passenger Traffic	1,966.58	32,776.33	28,094.00	1,512,969.77	1,480,193.44	1,484,875.77
1911	Intrastate Freight Traffic	$ *16,695.81	.....	.....	$1,551,497.80	$1,551,497.80	$1,551,497.80
	Intrastate Passenger Traffic	29,680.27	$ 494,671.16	$ 424,003.86	1,425,466.15	930,794.99	1,001,462.29
1910	Intrastate Freight Traffic	$ 19,672.75	$ 327,879.16	$ 281,039.29	$1,352,464.20	$1,024,585.04	$1,071,424.91
	Intrastate Passenger Traffic	*31,108.76	.....	.....	1,465,539.80	1,465,539.80	1,465,539.80
Four Months Ending Dec. 31, 1907:							
	Intrastate Freight Traffic	$ *3,231.37	.....	.....	$1,468,103.40	$1,468,103.40	$1,468,103.40
	Intrastate Passenger Traffic	590.69	$ 9,844.83	$ 8,438.43	1,541,134.98	1,541,134.98	1,541,134.98

*Deficit.

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APPENDIX No. 10—Sheet 2.

NET INCOME ON INTRASTATE FREIGHT AND PASSENGER TRAFFIC NECESSARY TO PAY A RETURN OF 6% AND 7% ON VALUE OF PROPERTY COMPARED WITH ACTUAL NET INCOME EARNED, YEARS ENDING JUNE 30, 1913, 1912, 1911, AND 1910, AND THE FOUR MONTHS ENDING DECEMBER 31, 1907.

Year Ending June 30th		Value of Property Assignable to Intrastate Traffic	What Net Income Should be to Yield a Return of 6%	What Net Income Should be to Yield a Return of 7%	What Net Income Actually Was	Difference Between Actual Net Income and Net Income on the Basis of 6%	Difference Between Actual Net Income and Net Income on the Basis of 7%
1913	Intrastate Freight Traffic	$1,326,658.84	$ 79,599.53	$ 92,866.12	$ 17,772.49	$ 61,827.04	$ 75,093.63
	Intrastate Passenger Traffic	2,014,508.93	120,870.54	141,015.63	*22,758.92	143,629.46	163,774.55
1912	Intrastate Freight Traffic	$1,534,011.27	$ 92,040.68	$ 107,380.79	$ *11,852.36	$ 103,893.04	$ 119,233.15
	Intrastate Passenger Traffic	1,512,969.77	90,778.19	105,907.88	1,966.58	88,811.61	103,941.30
1911	Intrastate Freight Traffic	$1,551,497.80	$ 93,089.87	$ 108,604.85	$ *16,695.81	$ 109,785.68	$ 125,300.66
	Intrastate Passenger Traffic	1,425,466.15	85,527.97	99,782.63	29,680.27	55,847.70	70,102.36
1910	Intrastate Freight Traffic	$1,352,464.20	$ 81,147.85	$ 94,672.49	$ 19,672.75	$ 61,475.10	$ 74,999.74
	Intrastate Passenger Traffic	1,465,539.80	87,932.39	102,587.79	*31,108.76	119,041.15	133,696.55
Four Months Ending Dec. 31, 1907:							
	Intrastate Freight Traffic	$ 489,367.80	$ 29,362.07	$ 34,255.75	$ *3,231.37	$ 32,593.44	$ 37,487.12
	Intrastate Passenger Traffic	513,711.66	30,822.70	35,959.82	590.69	30,232.01	35,369.13

*Deficit.

RETURN USING DIRECT CHARGE BASIS FOR APPORTIONING COMMON LINE MAINTENANCE OF WAY EXPENSES BETWEEN FREIGHT AND PASSENGER, AND DEFENDANTS' BASIS FOR APPORTIONING MAINTENANCE OF EQUIPMENT EXPENSE BETWEEN LINE AND TERMINAL.

APPENDIX No. 10—Sheet 3.

PERCENTAGE OF RETURN EARNED BY INTRASTATE FREIGHT AND PASSENGER TRAFFIC ON VALUE OF PROPERTY.

	Year Ending June 30th				Four Years Combined	Average of Four Years Combined	Four Months Ending Dec. 31, 1907
	1913	1912	1911	1910			
Intrastate Freight Traffic:							
Net Income applicable to return on value:							
Balance	$ 17,772.49			$ 19,672.75	$ 8,897.07	$ 2,224.27	
Deficit		$ 11,852.36	$ 16,695.81				$ 3,231.37
Percentage of return on value.	1.34%	None	None	1.45%	0.16%	0.16%	None
Intrastate Passenger Traffic:							
Net income applicable to return on value:							
Balance		$ 1,966.58	$ 29,680.27				$ 590.69
Deficit	$ 22,758.92			$ 31,108.76	$ 22,220.83	$ 5,555.21	
Percentage of return on value.	None	0.13%	2.08%	None	None	None	0.11%
Intrastate Freight and Passenger Traffic Combined:							
Net income applicable to return on value:							
Balance			$ 12,984.46				
Deficit	$ 4,986.43	$ 9,885.78		$ 11,436.01	$ 13,323.76	$ 3,330.94	$ 2,640.68
Percentage of return on value.	None	None	0.44%	None	None	None	None

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APPENDIX No. 11.

VALUE OF PROPERTY ASSIGNABLE TO INTRASTATE FREIGHT AND PASSENGER TRAFFIC COMPARED WITH THE VALUE ON WHICH THE ACTUAL NET INCOME WAS EQUAL TO A 6% AND 7% RETURN FOR THE YEARS ENDING JUNE 30, 1913, 1912, 1911 AND 1910, AND FOUR MONTHS ENDING DECEMBER 31, 1907.

Year Ending June 30th		Net Income (Exh. 61)	Value on which the Actual Net Income was Equal to		Value of Property Assignable to Intrastate Traffic (Exh. 61)	Value Devoted to Intrastate Traffic on which no Return was Earned Whatever	
			6%	7%		6%	7%
1913	Intrastate Freight Traffic	$ 4,517.64	$ 75,294.00	$ 64,537.71	$1,444,061.00	$1,368,767.00	$1,379,523.29
	Intrastate Passenger Traffic	* 35,332.72	.....	.....	2,006,483.00	2,006,483.00	2,006,483.00
1912	Intrastate Freight Traffic	*$27,084.23	.....	.....	$1,669,763.00	$1,669,763.00	$1,669,763.00
	Intrastate Passenger Traffic	* 9,870.22	.....	.....	1,506,942.00	1,506,942.00	1,506,942.00
1911	Intrastate Freight Traffic	*$33,316.23	.....	.....	$1,688,797.00	$1,688,797.00	$1,688,797.00
	Intrastate Passenger Traffic	17,888.18	$298,136.33	$255,545.43	1,419,787.00	1,121,650.67	1,164,241.57
1910	Intrastate Freight Traffic	$ 4,742.10	$ 79,035.00	$ 67,744.29	$1,472,150.00	$1,393,115.00	$1,404,405.71
	Intrastate Passenger Traffic	* 44,195.78	.....	.....	1,459,701.00	1,459,701.00	1,459,701.00
Four Months Ending Dec. 31, 1907:							
	Intrastate Freight Traffic	*$ 9,308.59	.....	.....	$1,598,022.00	$1,598,022.00	$1,598,022.00
	Intrastate Passenger Traffic	* 4,630.31	.....	.....	1,534,995.00	1,534,995.00	1,534,995.00

*Deficit.

APPENDIX No. 12.

NET INCOME ON INTRASTATE FREIGHT AND PASSENGER TRAFFIC NECESSARY TO PAY A RETURN OF 6% AND 7% ON VALUE OF PROPERTY, COMPARED WITH ACTUAL NET INCOME EARNED, YEARS ENDING JUNE 30, 1913, 1912, 1911 AND 1910, AND FOUR MONTHS ENDING DECEMBER 31, 1907.

Year Ending June 30th		Value of Property Assignable to Intrastate Traffic (Exh. 61)	What Net Income Should Be to Yield a Return of		What Net Income was (Exh. 61)	Difference between Actual Net Income and Net Income on the Basis of	
			6%	7%		6%	7%
1913	Intrastate Freight Traffic	$1,444,061.00	$ 86,643.66	$101,084.27	$ 4,517.64	$ 82,126.02	$ 96,566.63
	Intrastate Passenger Traffic	2,006,483.00	120,388.98	140,453.81	* 35,332.72	155,721.70	175,786.53
	Total	$3,450,544.00	$207,032.64	$241,538.08	*$30,815.08	$237,847.72	$272,353.16
1912	Intrastate Freight Traffic	$1,669,763.00	$100,185.78	$116,883.41	*$27,084.23	$127,270.01	$143,967.64
	Intrastate Passenger Traffic	1,506,942.00	90,416.52	105,485.94	* 9,870.22	100,286.74	115,356.16
	Total	$3,176,705.00	$190,602.30	$222,369.35	*$36,954.45	$227,556.75	$259,323.80
1911	Intrastate Freight Traffic	$1,688,797.00	$101,327.82	$118,215.79	*$33,316.23	$134,644.05	$151,532.02
	Intrastate Passenger Traffic	1,419,787.00	85,187.22	99,385.09	17,888.18	67,299.04	81,496.91
	Total	$3,108,584.00	$186,515.04	$217,600.88	*$15,428.05	$201,943.09	$233,028.93
1910	Intrastate Freight Traffic	$1,472,150.00	$ 88,329.00	$103,050.50	$ 4,742.10	$ 83,586.90	$ 98,308.40
	Intrastate Passenger Traffic	1,459,701.00	87,582.06	102,179.07	* 44,195.78	131,777.84	146,374.85
	Total	$2,931,851.00	$175,911.06	$205,229.57	*$39,453.68	$215,364.74	$244,683.25
	Four Months Ending Dec. 31, 1907:						
	Intrastate Freight Traffic	$ 532,674.00	$ 31,960.44	$ 37,287.18	*$ 9,308.59	$ 41,269.03	$ 46,595.77
	Intrastate Passenger Traffic	511,665.00	30,699.90	35,816.55	* 4,630.31	35,330.21	40,446.86
	Total	$1,044,339.00	$ 62,660.34	$ 73,103.73	*$13,938.90	$ 76,599.24	$ 87,042.63

*Deficit.

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JAMES D. MAHER

NO. [redacted] 252

IN THE

Supreme Court of the United States

J. SAM ROWLAND, WILLIAM F. McKNIGHT, AND THOMAS E. WOOD, RAILROAD COMMISSIONERS OF THE STATE OF ARKANSAS, *Appellants,*

vs.

SIDNEY E. BOYLE, EXECUTRIX OF THE ESTATE OF WILBUR F. BOYLE, DECEASED, AND ST. LOUIS AND SAN FRANCISCO RAILROAD COMPANY, *Appellees.*

ABSTRACT AND BRIEF ON BEHALF OF THE APPELLANTS

JOSEPH M. HILL
Special Counsel for the State of Arkansas

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NO. 648

IN THE

Supreme Court of the United States

J. SAM ROWLAND, WILLIAM F. McKNIGHT, AND THOMAS E. WOOD, RAILROAD COMMISSIONERS OF THE STATE OF ARKANSAS, *Appellants,*

vs.

SIDNEY E. BOYLE, EXECUTRIX OF THE ESTATE OF WILBUR F. BOYLE, DECEASED, AND ST. LOUIS AND SAN FRANCISCO RAILROAD COMPANY, *Appellees.*

ABSTRACT AND BRIEF ON BEHALF OF THE APPELLANTS

STATEMENT OF THE CAUSE.

The Issues.

Boyle, a stockholder of the St. Louis & San Francisco Railroad Company, brought a suit in chancery in the United States District Court for the Eastern District of Arkansas against said Railroad Company and representative shippers and passengers, and the Railroad Commission of Arkansas, alleging that the freight rates promulgated by the Railroad Commission in the tariff

known as Standard Distance Tariff No. 3, and passenger rates enacted by the General Assembly of Arkansas, of 1907, were confiscatory. (R. pp. 1-21.)

The answer denied all of the allegations of the complaint, and averred the rates were compensatory, and set forth many other reasons why the rates should not be enjoined. (R. pp. 27-33.)

To this replication was filed. (R. p. 41.)

The allegations in the complaint, answer, and replication in this case were identical with those in the case of Allen, et al., Railroad Commissioners, vs. St. Louis, Iron Mountain & Southern Railway Company, and Allen, et al., Commissioners, vs. St. Louis Southwestern Railroad Company, which were determined by this Court June 16th, 1913. (Allen vs. St. Louis, Iron Mountain & Southern Railway Company, 230 U. S., 553.)

In view of the identity of the pleadings in these cases it is not thought that a further abstract of them is needed.

History of the Case

An application for temporary injunction against the said freight and passenger rates was heard by Honorable Willis VanDeventer, then an United States Circuit Judge for the Eighth Judicial Circuit.

On September 3rd, 1908, Judge VanDeventer granted the temporary restraining order against the enforcement of Standard Distance Freight Tariff No. 3, and the passenger rate of two cents per mile enacted by the General Assembly, upon condition that the plaintiff give a bond in the sum of Two Hundred Thousand Dollars conditioned to keep a correct account showing the difference charged by the Railroad Company for carriage of persons and freight and the inhibited rates, and further conditioned that if it should finally be decided that so much of the order as inhibited the enforcement of existing rates should not have been made that the railway defendant, within a reasonable time, to be fixed by the court, refund in every instance to the party entitled thereto the excess of charge over what would have been charged had the inhibited rate been applied, together with lawful interest and damages; other appropriate conditions were made in said order. (R. pp. 34-36.)

An injunction bond in the terms prescribed by the Circuit Judge was filed and approved. (R. pp. 36-39.)

On June 14th, 1909, there was an order entered by consent wherein this suit was dismissed without liability upon the injunction bond unless it be reinstated as thereinafter provided; that during one year the "court tariff" which was a tariff made effective by the order of the United States

District Court, of June 2nd, 1909, should be effective upon said road; that there should be a two and one-half cent passenger rate on said road during one year; that the railroad should make monthly reports to the Railroad Commission of earnings and expenses, and divide the same between states and between freight and passenger business upon a form agreed upon and made part of the order; that at the end of one year either party might reinstate the suit and proceed with the litigation as though it had not been dismissed. It was expressly stipulated that in the event the suit was reinstated and proceeded to a final hearing and it was finally adjudged that the temporary injunction against the freight and passenger rates be dissolved the complainant, the defendant Railroad Company, and injunction bond should be liable for all charges for freight and passengers carried above the rates in Standard Distance Tariff No. 3 and in the two-cent passenger Act of 1907 to the same effect as if the suit had not been dismissed, and as if the rates in the court tariff were voluntarily made by the defendant Railroad Company. (R. pp. 42-50.)

On the 13th of October, 1910, the complainant moved for an order to be entered pursuant to the order theretofore made asking leave of the court to reinstate this cause and the court granted the motion and the cause was ordered reinstated and to proceed in regular order. (R. pp. 53-54.)

The original plaintiff died and the cause was reinstated in the name of his executrix, the present party, Sydney E. Boyle. Various changes were made in the personnel of the Railroad Commission, and the successors of prior commissioners were substituted from time to time. (R. pp. 55-56.)

On June 26th, 1911, an order was entered continuing this cause pending the decision of the Supreme Court of the United States in the case of St. Louis, Iron Mountain and Southern Railway Company vs. Robert P. Allen, et al. (R. p. 56.)

On July 23rd, 1913, the Railroad Commissioners filed a motion to dissolve the temporary injunction and alleged: That the temporary injunction was continued in this cause by Honorable Jacob Trieber, District Judge, imposing conditions for the continuance thereof by requiring a reduction of freight rates pending the litigation, which reduction was made, and in lieu of the rates in force after the first injunction was granted the "court tariff" was made applicable on all intrastate freight shipped within the State of Arkansas and continues now in effect; that said court tariff was formed under the direction of the District Judge; that

the tariff was intended to produce 33 1-3 per cent income over that produced by Standard Freight Distance Tariff No. 3. That similar injunctions were granted, and similar conditions imposed thereupon on behalf, of the St. Louis, Iron Mountain & Southern Railway Company and St. Louis Southwestern Railroad Company. That this case was continued until the Supreme Court of the United States finally determined the Iron Mountain and Southwestern Railway cases. That the Supreme Court of the United States on June 16th, 1913, reversed the decrees in said St. Louis, Iron Mountain & Southern and Southwestern Railway cases and directed that the complaints of said railways be dismissed, which was done by the District Court on the 19th of July, 1913.

That notice was given to the complainant and the defendant Railroad Company that these Petitioners would move for a dissolution of the temporary injunction.

The petitioners stated that the temporary injunction was secured upon evidence which alleged that the revenue produced from the freight and passenger rates enforced by the State of Arkansas were confiscatory, and that they used this method of making a calculation to show that the revenue produced a return on the property which was confiscatory, to-wit:

The property used by the railroad in Arkansas was divided between interstate and intrastate traffic by taking the gross revenue derived from each and dividing the property according to the proportion they bore to each other.

That the exepenses were divided by the same method between intrastate and interstate.

In addition thereto there were numerous affidavits filed by railroad officials testifying that intrastate traffic was more expensive than interstate. That calculations were made upon a basis of 25 per cent extra cost of intrastate passenger traffic, and 100 per cent extra cost of intrastate freight traffic. That the Supreme Court of the United States had in said Rate Cases determined that said revenue basis of dividing the property and expenses was unsound and unreliable and that the opinion evidence to the effect that intrastate passenger and freight traffic was more expensive than interstate freight and passenger traffic was too uncertain and vague to be the basis of finding that the rates prescribed by the State were confiscatory.

It was further alleged that the injunction was obtained in this cause solely upon the class of testimony condemned by the Supreme Court of the United States in said State Rate Cases and that the Honorable Willis VanDeventer, who granted the temporary injunction herein as a member of

the Supreme Court of the United States concurred in the opinion in said State Rate Cases which condemned as insufficient and unreliable the class of testimony upon which the temporary injunction was obtained.

An analysis was then made of the affidavits upon which the temporary injunction was granted and it was alleged that said affidavits showed that the railroad was earning between seven and eight per cent upon its property invested in Arkansas.

It was alleged that the temporary injunction and the order of the court continuing it upon condition authorized the defendant railroad to enforce the "court tariff" which was supposed to represent 33 1-3 per cent more revenue than Standard Distance Tariff No. 3, but which in fact the petitioners are informed and believe represents about 25 per cent more; that the continuance of the temporary injunction permitted the defendant road to charge more than two cents per mile. It was therefore prayed that in view of these facts the temporary injunction be dissolved. (R. pp. 57-60.)

On October 17th, 1913, an order of court was made extending the time of the complainant to begin taking proof until January 5th, 1914, on condition that the defendant railroad put in force the tariffs for freight and passengers then or thereafter established by the Railroad Commission of Arkansas, and in all other respects comply with all legal orders of the Commission except as they may be relieved by orders of this or any other court having competent jurisdiction in an independent proceedings instituted therefor.

This order was without prejudice to complainants' rights under the temporary injunction if upon final hearing the injunction was made perpetual. (R. p. 60.)

Subsequent orders of the court extended the time for the plaintiff to begin taking his testimony until June 15th, 1914. (R. p. 61.)

On November 27th, 1914, the plaintiff filed a supplemental bill. It was alleged therein that there had been no material change in the mileage of the railroad. It was alleged that during the entire period of time from institution of the original proceedings to this time the rates provided in Standard Freight Distance Tariff No. 3 and the Statute of 1907 have not and do not allow the railroad company any reasonable return on the investment in property used in operating said railroad in the State of Arkansas. It reiterated the allegations of the original bill that the rates prescribed by the statute and Commission produced a return which was confiscatory. (R. pp. 62-63.)

The Railroad Commission filed answer to the supplemental bill in which it was denied that the rates prescribed were confiscatory and alleged further the evidence upon which the plaintiff procured its preliminary injunction was insufficient to entitle it to have it granted; that its statement of expenses was erroneously made out and included interest charges, and in some instances expenses of property not in Arkansas, and rent of leased lines, and included some expenses in Missouri, Kansas, and Oklahoma, and the separation of state and interstate property and expenses was made upon the revenue theory, which is unsound, and which does not reflect the true condition of affairs. It asks that the original answer so far as applicable be adopted and this be taken in addition thereto in answer to the supplemental bill. (R. p. 64.)

On April 10th, 1915, the court rendered final decree, finding that the rates were confiscatory and enjoining their application by the railroad and the Railroad Commission. (R. pp. 65-66.)

The matter of costs was in the final decree left open, but subsequently a decree was entered on June 26th, 1915, adjudging the costs against the Railroad Commissioners personally. (R. p. 933.)

By appropriate orders the respective shippers and passengers, who were defendants, after they had been invited to join in the prayer for appeal and declined to do so, were severed from the cause and the Railroad Commissioners authorized to appeal as though all parties to the record were joined therein. (R. p. 933.)

On petition of both parties the court made an order that the testimony of Frank Nay, T. A. Hamilton, W. A. Symons, J. E. Frates, L. S. Mayer, and L. N. Simson be reproduced in the exact words of said witnesses. "This order is made, as in the opinion of the court, a reduction of their testimony to narrative form would not present the facts accurately." (R. pp. 932-933.)

An assignment of errors was filed; appeal bond given and approved; and appeal to this court prosecuted in due form and apt time. (R. pp. 934-940.)

BRIEF SUMMARY OF THE EVIDENCE.

The Opposing Statistics.

The temporary injunction was granted in 1908 upon statistical evidence presenting the condition of the railroad receipts and expenses for the four months ended December 31st, 1907. These months were taken as a test period to prove that the rates sought to be enjoined were confiscatory.

In the application for preliminary injunction the value of the property as assessed by the State of Arkansas multiplied by two was taken as the value of the property. It was developed in the evidence in this cause (and also in the Iron Mountain and St. Louis Southwestern cases heretofore determined by this court) that property is assessed in Arkansas on the basis of 50 per cent of its true value.

This case was tried upon the statistics of the railroad for the four months ended December 31st, 1907. Exhibits were introduced by each side showing the relative contentions as to its condition as of said period, and each side also filed exhibits of subsequent years for the purpose of throwing light upon the condition of affairs of the test period, and also for the purpose of showing the condition of the affairs of the road in subsequent years, and as reflecting, or as unreflecting the condition of affairs in 1907, as shown by the condition in subsequent years.

On the trial of the case testimony was introduced by the plaintiff as to the value of the railroad property, and exhibits were filed by it upon said subject. Subsequently an agreement was made, near the close of the testimony, to use double the assessed value of 1907 as the real value of the railroad property at that time, and the value of the property of subsequent years to be increased by the Additions and Betterments of each year subsequent thereto. These amounts were ascertained and agreed to. (R. pp. 906-907.)

The stipulation places the value of all of the property of the railroad company in the State of Arkansas used in its operations, for the calendar year of 1907, at $15,692,338.00. The Additions and Betterments for each fiscal year beginning with June 30th, 1908, and ending June 30th, 1913, are set out and found at page 907.

In other words, to obtain the value of the property at any of said years subsequent to 1907, the valuation of that year, to-wit: $15,692,338.00 is to be taken and to it added the Additions and Betterments of each year thereafter up to the year where the valuation is sought.

The exhibits of the railroad company which show computations of return upon property, except Exhibit 61, were all made prior to this stipulation and are made upon the engineer's estimate of the value of the property.

The court in his opinion stated that the agreed value was 27 per cent less than that claimed by the company as shown by the evidence of its chief engineer before the stipulation as to value was made. (R. p. 930.)

Attention is called to these facts at this time so that the court in considering the evidence and the exhibits will not

be misled by the low return shown in many of the company's exhibits, as these exhibits are made upon an estimated valuation 27 per cent greater than that agreed upon as the valuation to be used in this case.

The State's exhibits were all made upon the basis of doubling the assessed valuation. There is no controversy that the values used in the State's exhibits are the values agreed upon, nor is there any controversy that the value used in the Railroad's exhibit 61 is the value agreed upon.

While out of the order in which the evidence was introduced, yet it is thought it will be helpful to the court in advance of considering the evidence to see the financial condition of the road in Arkansas as presented in the opposing exhibits.

The railroad company's exhibit 61, its last word on the condition of its affairs in Arkansas during the four month period of inquiry and for four years subsequent thereto shows the following results: For the four months test period it shows a return from all business in the State—intrastate freight and passenger, interstate freight and passenger, and mail and express—of 4.50 per cent; for the fiscal year ending June 30th, 1913, it shows a return upon all of its business upon its property in the State of 6.93 per cent, and upon the average of the four years ending June 30th, 1910, 1911, 1912, and 1913, 5.63 per cent.

This exhibit is found beginning at page 2209, and shows each of these periods in detail. It contains two classes of errors:

(a) From the operating revenue is deducted a diminution in revenue as if a two-cent passenger rate and the Commission's freight tariff had been charged.

In other words, these exhibits take from the actual intrastate revenue of each of said periods (except 1907) the difference between the revenues actually received and the revenue which the railroad estimates it would have received had the two-cent passenger rate and the Commission's freight rate been in force during these periods. This supposes that every passenger who travelled under the three-cent or two-and-one-half-cent rate would have travelled the same distance and no more under the two-cent rate, and that no more travel would have occurred under the two-cent rate than did occur under the three- or two-and-one-half-cent rates, and likewise estimates that the freight which actually moved under the rates in force during these periods would have moved, no more and no less, had the Commission's Freight Tariff been in

effect. (R. pp. 102-103.) Attention will be given to this contention in the argument. It is simply stated here.

(b) The figures used by the railroad company in this exhibit for 1907 are the same figures which the railroad used in its exhibits 27A and 28. These exhibits, 27A and 28, were filed to correct mistakes which had occurred in Exhibit 27, its final summary up to that time. It is clearly shown in the evidence that these figures in certain instances therein pointed out are erroneous, or what would be more accurate, they needed adjustment and revision, and in some instances reduction to better bases to make them reflect the actual condition of affairs.

The differences in the actual figures are developed in the following exhibits:

Exhibit V adjusts the freight revenue; Exhibit W corrects certain errors in the maintenance of equipment expenses. Exhibit X corrects some errors in the transportation expenses. The defendant's statement of the condition of the railroad as opposed to that which is set up as the railroad's, is found in exhibit Y, page 2257. This exhibit makes a statement of the available income and return on the value of the property for the four months ended December 31st, 1907, adjusted by said corrections. It substitutes the figures in Exhibit V for the freight earnings; it substitutes the figures in Exhibit W for the maintenance of equipment expenses; it substitutes the figures in Exhibit X for the transportation expenses, and in all other respects takes the Company's exhibits for each item of earning and expenses, taxes, etc.

This Exhibit shows a net return upon the property from all classes of business in the State of 6.53 per cent for said period. The State contended that this four months period was not a normal period, and introduced numerous exhibits showing the abnormality of this four months period, comparing with later periods and filed exhibits bringing said period to a normal level.

According to the State's exhibits the return of 6.53 per cent, which is the actual return upon the property, on an averaging basis is 1.02 per cent below the normal. In other words, if this four months period is brought to a normal it is shown that the return upon the property from all the business in Arkansas was 7.55 per cent.

This was shown in Exhibit "O." There was a mistake in the original Exhibit "O" and in lieu of it was filed Exhibit "O 1," which is found at page 2295 (the original Exhibit "O" not being brought forward, as Exhibit "O 1" was substituted for it). The correction of the error reduced the return from 7.55 per cent to 7.51 per cent.

These matters will be set forth more fully in the argument. Attention is merely called at this time to the contention, which it will be demonstrated the evidence sustains, that this road was during the test period of four months ended December 31st, 1907, actually earning 6.53 per cent on its property in Arkansas and that the net revenue available during that period for return upon the property was below the normal, and that adjusting the actual figures of this abnormal four months to a normal condition shows that the road was actually earning during the period of inquiry 7.51 per cent upon its property, and this too under the enjoined rates.

The Witnesses.

The case was tried upon the testimony of six witnesses, Mr. T. A. Hamilton, Mr. Frank Nay, Mr. J. A. Frates, Mr. W. A. Symons, Mr. L. S. Mayer, and Mr. L. N. Simson.

Mr. Symons testified to one issue alone and that to the relative proportion between line and terminal of locomotive, freight car and passenger car repairs. Subsequently he was in rebuttal called by the railroad upon some questions of tractive power of locomotives and some other operating conditions relating to the engine ton mile as the basis for dividing common expenses between freight and passenger traffic.

Mr. Frates was called by the railroad on certain operating conditions bearing upon the value of the engine ton mile as a proper basis for dividing common expenses between freight and passenger traffic.

These two witnesses reached only the subjects named.

The plaintiff's case was made out by the testimony of Mr. Hamilton and Mr. Nay with some supporting testimony on the one item referred to, by Mr. Symons. It may be that the plaintiff will contend also that it has some support from Mr. Frates for the engine ton mile basis.

As the plaintiff introduced Mr. Frates as a witness it may be assumed that the plaintiff so regards his testomony, but it will be shown in argument hereafter that Mr. Frates' testimony sustains the contention of the State that the engine ton mile is not a proper basis for the purpose for which it was used.

Be that as it may, Mr. Symons and Mr. Frates were witnesses only upon two points in the formula which was used by the railroads in this case to divide the expenses between state and interstate, apportion the revenue between state and interstate, and apportion the property between state and interstate.

Mr. Symons was a mechanical engineer of much experience. Mr. Frates was a Superintendent of the Frisco Road, a man of large operating experience. As the plaintiff makes out its case wholly by the testimony of Mr. Nay and Mr. Hamilton (aside from some support upon the part of the two men referred to), it is important to examine the qualification of these gentlemen on the issues involved.

Mr. Hamilton occupies the position of Supervisor of Efficiency of the defendant railroad. His experience in railroad service began when he was a lad of fourteen years, as messenger boy; then he served as junior clerk in the office of an Assistant General Manager; then he was a clerk in a freight accounting department in handling way-bills, preparation of records for verification to agents' accounts; then he was the assistant to the freight accountant in a local freight office; then he served as a "general handy man" for the auditor of freight receipts in filling positions of men temporarily incapacitated. His service covered every phase of railroad freight accounting from the revenue standpoint. Then he became a way-bill clerk; then the chief out-bound clerk with charge of the way-bill desk in addition; then he became chief clerk of a general agent of a traffic department; then he left railroad service and took service with Haskins & Sells, certified public accountants. He served as an accountant for about six years and then entered his present employment of Supervisor of Efficiency of the Frisco road.

During his service with Haskins & Sells he was engaged in the preparation of data under direction of members of that firm for use in the Missouri Rate Case, and then in the Arkansas Rate Case. In the Arkansas case he had charge of the detailed preparation, gathering data, and preparation of exhibits under the direction of Mr. Wharton, one of the members of said firm. (R. pp. 66-68.)

Mr. Frank Nay is the Comptroller of the Chicago, Rock Island & Pacific Railway Company. He began his railroad service in 1883 as a statistical clerk. He served two different roads in that capacity for a period of four years; then he was a traveling auditor; then he was the chief clerk to a General Auditor; then he was the Auditor of the Minneapolis & St. Louis Railroad, and also Auditor of the Iowa Central Railroad; then he became Assistant Comptroller; then General Auditor, and then Comptroller of the Rock Island System. (R. p. 291.)

Thus it is seen that his entire railroad experience has been in the auditing departments of railroads.

The witnesses introduced by the State were Mr. Mayer and Mr. Simson.

Mr. Mayer occupied the position of Auditor of the Corporation Commission of Oklahoma, and had fourteen years' railroad experience before beginning service with the Corporation Commission of Oklahoma, and had been with the Corporation Commission three years as Auditor in charge of the Division of Statistics and Accounts. (R. p. 543.)

His railroad experience was as follows: He began work as a section hand; then as a time-keeper on the section. This work he did in his summer vacations. Then he became a brakeman; then a machine helper; then clerical work in Chief Dispatcher's office; then became an assistant trainmaster; then was in charge of the Maintenance of Way Department. The engineer of Maintenance of Way of the road had been displaced and he was given the duties performed by the engineer in charge of Maintenance of Way, Bridge and Building work. There were six Road Masters under him. This was on the Chicago & Alton Railroad.

His next work was in the office of the President of the M., K. & T. Railroad. His duty was to analyze all statistical statements that were made which dealt with all phases of railroad operation, and write such letters to be approved and signed by the President concerning the part of the railroad operation and maintenance as he thought needed correction. Then he acted as Auditor of Disbursements on the same road, and was carried on the pay-roll as Chief Clerk of Disbursements. He went from that work to the Corporation Commission of Oklahoma. (R. p. 575.)

His statement of his position in charge of Maintenance of Way of the Chicago & Alton seemed to be doubted from the questions put to him, and he introduced a letter from the General Manager of the road in which it is stated he had had full charge of the Maintenance of Way, Bridge and Building department during the past two years on the Chicago & Alton Railroad and is able to fill a better position than the one he now occupies. (R. P. 588.)

Mr. Simson is an accountant and the resident partner of the firm of Haskins & Sells, in charge of the St. Louis office of that firm. He had rather extensive experience in several roads in the accounting department, occupying various positions in the accounting department of different roads. He left railroad service in 1901 and entered the employment of Haskins & Sells, as assistant accountant and has continued as a public accountant from that time to the present, except four years when he did accounting work in insurance investigations and later worked for the Equitable Life Assurance Society. His accounting work has taken him gen-

erally over the country in examination of railroad accounts, commercial institutions, in fact, nearly all lines of business.

History of the Formula.

Mr. Hamilton testifies that in July, 1913, he was requested by the General Solicitor of his law department to represent the law department of his Company in a conference that had been called to consider the decisions handed down by the Supreme Court of the United States known as the State Rate Cases.

His road had this injunction suit pending in Arkansas, and a similar one in Oklahoma.

All of the bases formerly employed by the railroads in division of expenses between state and interstate traffic in former rate cases had been condemned by the Supreme Court as they understood it. It, therefore, became necessary "in compliance with the expressed wish of that Court," to revise their methods and make another effort to get at the facts.

They interpreted the decisions to mean that expenses which are common to various classes of traffic should be divided on the use unit basis; that the use made of the property by each class should determine the apportionment of expenses, and subsequently the value of the property on which the carrier expected to earn a return on each class.

They did not understand that the court told them how to do it, but told them what they wanted and they undertook to do it. By each class he meant freight and passenger, interstate and intrastate, mail, express, and miscellaneous. The use is reflected by the various physical factors: train mile, ton mile, engine mile, car mile, tons and passengers.

The first conference of this Committee was had early in July, 1913, a few days after they got the decision of the Supreme Court in the Minnesota Rate Case. Conferences were held extending into the middle of October, 1913. As the result of these conferences which were held practically every week, the Formula, which, in the opinion of the conference Committee, complied with the expressed wish of the Supreme Court, was devised.

The Formula which was filed as Exhibit No. 1 has a list of the personnel of the Committee. The Exhibit shows the names of all who participated at this conference either directly as the Committee, or in an advisory way. (R. pp. 68-70.)

The Formula which is Exhibit 1, beginning at page 1797, shows the Committee who prepared it to be composed of James Peabody, Statistician, A., T. & S. F. Rd. Co.; F. Nay,

Comptroller of Rock Island Lines; R. J. McCarty, Vice-President Kansas City Southern Railway; E. W. Peabody, Statistician, M., K. & T. Railway; T. A. Hamilton, Supervisor of Efficiency, St. Louis & San Francisco Railroad. The names of general attorneys and solicitors, engineers, auditors, and statisticians of other railroads who rendered valuable aid in counsel and co-operation with the Committee are printed on page 2.

Mr. Hamilton stated that the theory of the Committee was that the factors shown in this Exhibit reach, in so far as their judgment could determine it, in each instance, the use of the property and the use of the property which caused the incurring of each item of expense; that was the keynote of the preparation of the Formula. (R. p. 72.)

Mr. Nay gives substantially the same account. (R. pp. 292-293.)

The Formula, Exhibit 1, beginning on page 1797, consists of 39 pages of original matter without the interleaved pages.

The Formula.

The Frisco made many modifications of the Formula as prepared by the Committee. Mr. Hamilton explains that by stating there were some local conditions on the Frisco, minor in their nature, which made it necessary to slightly vary the application of the bases laid down in the Formula, but without variance in the principles which the Formula laid down. (R. p. 75.)

These modifications were inserted as typewritten matter interleaved. They are frequently referred to as the typewritten modifications. Exhibit 1 instead of having these modifications typewritten has them in their original form of interleaves, but on more substantial paper and printed on different colored paper. When you see references to the typewritten interleaved modifications of the Formula they are found exactly the same in Exhibit 1 only in more durable shape and printed on the saffron colored paper.

The primary division in the Formula is between line and terminal, and page 2 contains a diagram giving the distinction between them.

Line expenses are defined to be those which attach to or are directly connected with, or occasioned by, the transportation of traffic from place of receipt, one terminal, to the point of delivery, another terminal. Any service performed in the movement between these termini is line expense, and any service incident thereto constitutes a line expense.

Terminal expenses are those which attach to or are connected with, or occasioned by, the securing, receiving, loading, or otherwise preparing traffic for movement, and the

unloading, delivering, and other outlay incident to the disposition of the traffic at delivering station. Any service incident thereto, and any expense incurred in connection therewith, constitutes a terminal expense.

These primary divisions of all expenses between the line and terminal are further defined and illustrated at pages 3-5 of the Formula.

This plan contemplates that every item of expense of a railroad is either line or terminal and provides for an allocation thereof to one or the other class. After thus defining its scope then the Formula takes up bases for the apportionment of revenue and expenses, and property.

The first step is the apportionment of revenue to the States.

The intrastate revenue in the main apportions itself automatically. A system of apportioning interstate revenue on a mileage prorate including an equivalent mileage for terminal cost is worked out. This will be hereafter referred to in argument. Then the revenue from various other sources other than transportation are assigned to the States on some bases of apportionment adopted therefor.

The next step is the apportionment of expenses to States by primary accounts. This is largely automatic as to Maintenance of Way and Structures except where divisions cross the State line and there are common expenses and some basis must be obtained for an apportionment, and various bases are used therein.

On Maintenance of Equipment, expenses of locomotive repairs, renewals and depreciations, are worked out on an elaborate system. Running repair costs were assigned on the basis of general repair costs where an engine performed service in one or more States or classes of service, on basis of an average mileage repair cost. This was a modification of the Formula. Formula, page 9a.

Passenger train car repairs were assigned to the State on a basis of car mileage in each State (Pullman mileage excepted); freight car repairs and work car equipment on the same basis. (Formula Page 9.)

Traffic Expenses, after making a division between freight and passenger, were apportioned to States on a basis of net ton miles and revenue passenger miles. Transportation Expenses were apportioned on many bases where they could not be definitely located. Most of them were directly located.

General Expenses were apportioned on a basis of assignment of all operating expenses in Accounts 1 to 105; that is, they were treated as overhead expense.

The next step was the apportionment of expenses between

line and terminal. Tracks are defined and the expenses of the defined tracks correctly located. Telegraph and telephone lines are assumed to be common, and apportioned half and half between line and terminal. Buildings, fixtures and grounds were apportioned on many bases.

Maintenance of Equipment is the next step. Steam locomotive repairs, renewals and depreciations are divided between freight and passenger and then the freight locomotive repairs apportioned between line and terminal in the ratio that time in line service and time in terminal service bear to the total time on the road.

Passenger locomotive repairs are divided between line and terminal in the same proportion as is determined for passenger cars. Switch locomotives to be determined between line and terminal on basis of time employed in switching line and terminal cars respectively. The amount assigned to "work" to be ascertained on mileage basis and apportioned on the basis of account 43, which is an apportionment on basis of accounts 2-17 inclusive. The division of passenger car repairs apportionable to line or terminal, it is stated, is wholly a matter of opinion which must be determined by experts.

The Chairman of the General Managers Association submitted by letter ballot an inquiry to the general managers accompanied by a full explanation of exactly what in the Formula constituted line and terminal service. An average was taken of these letter ballots; 64.94 per cent assigned to line and 35.06 per cent assigned to terminal. (Formula page 13.)

The same course was pursued with freight car repairs, resulting in an assignment of 36.03 per cent to line, and 63.97 per cent to terminal. (Formula page 14.)

Mr. Symons was called as a witness on this subject by the railroad, and testified as an expert, as to the expense to be assigned to line and terminal respectively, in regard to locomotive, passenger car, and freight car repairs, renewals, and depreciation.

After his testimony was given the railroad filed Exhibit 51, Record page 2186, giving the effect of applying locomotive and car repair percentages offered in evidence by Symons to the Exhibits previously filed based on General Managers' average opinions.

Mr. Hamilton explains the effect in dollars and cents between the Symons percentages and the General Manager's percentages as worked out in the exhibits, which is negligable, Record page 537.

The next step is the apportionment of Transportation Expenses between line and terminal. The big item of this is the wages of the yard men and of the trainmen. This is worked out on a time study proposition. The General expenses are apportioned on an overhead basis.

Next comes the apportionment of line expenses between freight and passenger by primary accounts. The biggest item in the Maintenance of Way are accounts 2 to 10, which include the roadway proper between stations, and this is divided on the engine ton mile basis, of which more anon.

The next largest item is Buildings, Fixtures and Grounds, which is worked out on many different bases, principally time studies. It would be too tedious to take up the various bases used for this apportionment.

The next step is the apportionment of terminal expenses between freight and passenger by primary accounts. These are worked out under the various bases referred to heretofore and some which will be referred to in the course of the argument.

Next is taken up the apportionment of line and passenger expense between interstate and intrastate by primary accounts. Then the apportionment of line freight between intrastate and interstate is worked out, and similarly the apportionment of terminal passenger between intrastate and interstate by primary accounts, and an apportionment of terminal freight between intrastate and interstate by primary accounts.

After these various apportionments are made on the numerous bases then there was an adjustment of company or non-revenue service between freight and passenger. An explanation of it is found on page 37 of the Formula.

Then the Formula proceeds to an apportionment of property values in the State between classes of traffic. It provided that the values are to be located by the engineering department to individual stations, other individual terminal facilities and tracks and to certain convenient sections of line.

The value of individual facilities and tracks to be apportioned between freight and pasenger and between line and terminal in the ratio of the percentages determined for an apportionment of the maintenance of such facilities. Other values common to freight and passenger or to line and terminal, or common to all, are apportioned in accordance with the apportionment of maintenance changes of the same facilities except that line values common to freight and passenger are to be apportioned on the basis of revenue train miles

including mixed train miles which are to be split one-half to freight and one-half to passenger.

The apportionment of value of roadway and structures between state and interstate, and mail and express to be in the ratio of the assigned Maintenance of Way and Structure expense, after company material adjustment had been made, treating freight and passenger separately. (Formula page 38.)

The Frisco made material modification of this plan. (Formuula page 39a.)

Under it the original cost of roadway and structures was apportioned first to the various classes of service, and subsequently to the various classes of traffic, on the basis of assignment of Transportation expenses to each class of service and traffic. In other words, instead of taking all of the expenses for this assignment, Transportation expenses alone were taken as the basis for the apportionment of the property.

The locomotive values were apportioned on an engine value mileage basis.

Evidence to Sustain the Formula.

Except as to two propositions (the division of expenses of repairs of locomotives, freight, and passenger cars between line and terminal which was sustained by Mr. Symons and the value of the engine ton mile as unit for the division of common expenses of the line proportion of the roadway between freight and passenger, which was supposed to be supported by Mr. Frates), the testimony to support the Formula is only that of Mr. Hamilton and Mr. Nay.

Heretofore is set out their experience and qualifications. As will be seen from following their testimony, which goes into much detail, and into every basis adopted, many problems are presented for the solution of which they have had no practical experience and only theoretical information gathered from Rate Cases and auditing railroad accounts. They take up and support each item in the Formula and exhibits worked out thereunder except such matters where they grudgingly admit mistakes or omissions which they say are negligible.

The Testimony in Opposition to the Formula.

The testimony offered in opposition to the Formula was of two classes: Exhibits prepared by the State's witnesses, the mathematical accuracy of none of which is disputed (after some errors had occurred, substituted exhibits were filed in lieu of the erroneous ones) and the opinion evidence of Mr. Simson and Mr. Mayer.

The experience and qualification of Mr. Simson and Mr. Mayer have heretofore been set out. Mr. Simson has had a long accounting experience just as Mr. Nay has had a long accounting experience. Mr. Mayer has had considerable practical railroad experience, as much or more than Mr. Hamilton. He has had three years of theoretical accounting work with the Corporation Commission just as Mr. Hamilton has had several years of theoretical accounting work with Haskins & Sells and in his present position in handling data and statistics in Rate Cases.

Mr. Mayer criticizes the Formula in many of its most material features and gives his reasons for objecting thereto. He also files an Exhibit, "CC," which demonstrates the fallacy of engine ton mile as a basis of dividing the common line expenses between freight and passenger. He objects specifically to the arbitrary division of all expenses between line and terminal. (R. pp. 571-574.)

He objects to using the Transportation expenses as a basis for apportionment of the value of the property between state and interstate. (R. pp. 566-567.)

He objects to classifying the breaking up and making up of trains as a line expense; and shows that by thus doing the intrastate freight traffic is being charged with expenses which it does not incur; that the average haul of intrastate freight is 25 miles and division points are usually about one hundred miles apart, and therefore, this expense, which is incurred there, is ratably put upon the intrastate traffic, when in fact the intrastate traffic except in a few instances would not pass through the division point and incur this heavy expense. (R. p. 562.)

Mr. Simson testified that from his experience as a railroad auditor and as an accountant that the divisions between line and terminal and subsequently between state and interstate as worked out in this Formula are such that if they were submitted to him by a client asking his advice as to whether he could accept the figures thus worked he would say that he could not accept them. He gives his reasons therefor. (R. p. 630.)

The exhibits filed by the State dealing with the Formula will be taken up in the course of the argument.

The testimony of Mr. Symons and Mr. Frates will be dealt with under the subjects which they discuss.

The Application of the Formula to this Case.

If the Formula was applied to existing conditions and the data called for by it was gathered concurrently with the operations performed and expenses incurred it would be subject to the criticisms which have been made of it, but when, as in this case, it is

not so applied but is used by a system of equation to ascertain the condition of affairs of the road prior to the granting of the preliminary injunction, a period of six years before the tests were made which are its foundation, an additional question of its value is brought into the case. Mr. Hamilton explains how it was applied as follows:

It was necessary first to ascertain what character of freight and in what quantities each local freight train and mixed train and through train carried within the State of Arkansas. That could not be done thoroughly by going back to the Company's regular records. It had necessarily to be done as a matter of special investigation. They placed clerks upon all the local freight and mixed trains running in Arkansas during the months of November and December, 1913. They placed a special yard clerk at the termini of all through freight runs whose duty was to see that all of the contents of the train as it left the termini were recorded. They imposed upon conductors in charge of through freight trains the duty of recording the facts as to the character and quantity of freight, distance hauled, and all necessary data covering all the freight which they picked up and set out of the train between termini, and a yard clerk at the arriving terminal was required to fill out a report handed him by the conductor, which in the first instance he had received from the clerk at the departing terminal, containing all the data which the conductor had not filled out or which the yard clerk at the originating terminal had not filled in. The test was made thoroughly, going into every minutiae of the movement. This was for two months. (R. pp. 75-76.)

In carrying out this work certain forms of circulars and instructions were necessary. Copies of them are offered as Exhibits 2a-2k. (R. p. 79.)

In the months of November and December, 1913, similar investigations and analyses were made of passenger trains. (R. p. 84.)

Through various exhibits the data collected and the methods applied under the Formula are worked out for the two test months of 1913 in Exhibit 17, page 2022, showing the total operating expenses of intrastate and interstate freight and passenger, and mail and express traffic; also excess cost of intrastate traffic—freight and passenger—over the interstate traffic. According to this exhibit there was an excess cost of intrastate over interstate passenger traffic of 15.43 per cent and of intrastate freight over interstate freight of 319.58 per cent.

"This Exhibit brings to a focus the results of the two months tests that were made, our effort being through this

detailed analysis and application of this formula to work out for this test period which we consider representative, at least the excess cost of intrastate passenger and freight business over interstate, and substitute that detailed, that careful, close to the ground analysis, for the expert opinion that has gone heretofore as to those extra costs." (R. p. 91.)

Having obtained from Exhibit 17 the alleged extra cost then they took those percentages back into the prior years of 1913, 1912, 1911, 1910, and the four months ended December 31st, 1907, as reflecting proportionally the excess cost of intrastate traffic over interstate in each of these periods; so when the division of freight expense and passenger expense in these prior years and period were set up in subsequent exhibits they added to the ton miles and passenger miles intrastate these percentages of extra cost determined in the two months of 1913; "that was the connecting link between the test period and prior years." (R. p. 93.)

Exhibit 23 is an explanation of the method employed in ascertaining figures for earnings and expenses assigned to Arkansas and to freight, passenger, intrastate and interstate, mail and express for the years 1912, 1911, 1910, and the four months of 1907.

It was the application of the earnings and expenses, etc., in the year 1913 as shown in Exhibit 22 (R. p. 2048) for the prior years and the period of inquiry. It took ten months and $35,000.00 to get the company's figures contained in the first 22 exhibits submitted. (R. p. 103.)

This Exhibit 23 states that the railroad in preparing reports required by the Railroad Commissions of the States, during previous years used a Formula for the allocation of revenues and expenses to the State which it had uniformly applied throughout those years.

It also had in use uniformly, throughout all of the years mentioned, a formula for the division of expenses between freight and passenger service for purposes of its own operating comparisons. In order to accomplish a reassignment of earnings and expenses to Arkansas for these prior years on the basis of the new Formula in the time at the disposal of the railroad and avoid the enormous expense incident to reworking all of the voluminous detail it was felt that a proper showing of Arkansas earnings and expenses divided between freight and passenger service in these prior years might be made by determining the relation of the results obtained in the year 1913 from an actual application of the earnings and expense of the road on the New Formula filed as Exhibit 1, and the formula formerly used in making the reports to the Railroad Commission and the formula for dividing ex-

penses between freight and passenger for purpose of operating comparisons, by equating the earnings and expenses reported to the Railroad Commission and as divided between freight and passenger on basis of percentage relation of the results of applying the new Formula, Exhibit 1, and the results of applying the Railroad Company's old Formula to the earnings and expenses of 1913 in minute detail; that is to say, a percentage relation in 1913 was established between the old and new Formulas. This equation was applied only to such items as could not be actually allocated to Arkansas and between freight and passenger or could only be so allocated by a detailed analysis or prorate. Such items as permitted of a direct allocation without analysis or prorate were directly allocated in each of the years, namely, intrastate freight and passenger revenue, mail and express earnings and special train service revenue. In order to reach to the four months ended December 31st, 1907, this method was adopted: The report to the Railroad Commission including these months was the report for the fiscal year ended June 30th, 1908. That year the railroad had not made any assignment of earnings and expenses to Arkansas, but had reported to the Railroad Commission the earnings and expenses of the entire railroad. The expenses assigned to Arkansas between freight and passenger for the four months were assigned on the basis of the railroad's old Formula and then the same equation of earnings and expenses for the four months period was made with the new Formula as was made for the years 1912, 1911, 1910. (P. 2 Exhibit 23.)

Mr. Hamilton explains this method also in his testimony, page 103-104.

The percentages obtained in the two months test period of 1913 were for the purpose of showing the extra cost of intrastate over interstate business and were carried back into the period of inquiry in 1907. The freight and passenger division was also made on the percentages derived from the two months test and the engine ton mile was the unit. (R. p. 854), but the assignment of expenses and revenue to the State was made on the analysis of the year 1913 and equated back to the other years and period. (R. pp. 141-142.)

Mr. Hamilton states that as an academic proposition that Mr. Douglass' bases were wrong. They are not all use units by any means. What they have done is to determine the relation of what Mr. Douglass' Formula brought in 1913 to what they got by completely reworking 1913 on the basis of the new Formula, Exhibit No. 1; and when they established that relationship, to equate Mr. Douglass' assignment in the prior years and four months period of 1907 to the new Formula on the basis of that 1913 relationship between the two

formulas. In his opinion it did not make very much difference whether Mr. Douglass divided those expenses in all these back periods by engine miles or potatoes, so long as he used the potatoes consistently and used them in 1913, where they made their comparisons of his results with the new Formula. "As a mathematical proposition our equation is correct." (R. p. 276.)

Mr. Nay gave his opinion that the equating of the one formula with another was a proper process. (R. pp. 344-346.)

Aside from the exhibits on each side which will be referred to in the argument, this was all the testimony to sustain the equating process.

On the other hand the State's witnesses, Mr. Mayer and Mr. Simson, disapproved it for reasons given by them. (R. pp. 700 and 630.)

It is an admitted fact that the value of the equation, if it has any at all, is based upon the proof that the test period of 1913 was in all respects similar to that period to which the equation was carried. The Railroad Company attempted to meet this proof by introducing various exhibits called "normality exhibits." These will be referred to in the argument.

ASSIGNMENT OF ERRORS.

"Now comes J. Sam Rowland, William F. McKnight and Thomas E. Wood, constituting the Railroad Commission of the State of Arkansas, defendants in the above entitled cause, and aver that in the record and proceedings herein there has been manifest errors committed to this, to-wit:

1. The Court erred in granting a perpetual injunction against the Railroad Commission, and all other per-
2351 sons, from enforcing Standard Freight Distance Tariff No. 3 and amendments thereto adopted prior to the institution of this action prescribing rates for the transportation of classes and commodities, and from enforcing an Act of the General Assembly of the State of Arkansas, approved February 9th, 1907, entitled, "An Act to Amend Section 6611 of Kirby's Digest of the Statutes of Arkansas by Fixing Passenger Rates in this State and for Other Purposes."

2. The Court erred in not dismissing the plaintiff's bill because plaintiff failed to establish by clear and decisive evidence that the intrastate freight and passenger rates sought to be injoined were confiscatory.

3. The Court erred in not dismissing the plaintiff's bill of complaint because the plaintiff failed to overcome the presumption that the freight rates established by the Railroad Commission and the passenger rates established by the General Assembly were reasonable and compensatory.

4. The Court erred in not dismissing the bill of plaintiff because the preponderance of the testimony established the fact that the freight and passenger rates sought to be enjoined were compensatory and earning the plaintiff a fair return on its property.

5. The Court erred in finding that the Formula, Exhibit No. 1, introduced by the plaintiff, fairly separated the expenses between intrastate and interstate traffic.

6. The Court erred in finding that the Formula, Exhibit No. 1, fairly apportioned the property between intrastate and interstate business.

7. The Court erred in adopting the plaintiff's basis for apportioning the expenses between intrastate and interstate traffic.

8. The Court erred in adopting the plaintiff's basis
2352 for apportioning the revenue between intrastate and interstate traffic.

9. The Court erred in the apportionment of the property to intrastate traffic.

10. The Court erred in retaining jurisdiction of this cause for any other purpose than to permit these defendants to show a changed condition which might relieve them of the injunction.

11. The court erred in decreeing that these defendants pay any part of the costs.

12. The Court erred in decreeing that any provision of Standard Freight Distance Tariff No. 3 be enjoined.

13. The Court erred in not requiring the plaintiff or the defendant Railroad Company to give bond to refund the difference in the enjoined rates and those charged by it pending the hearing of the appeal herein.

Wherefore for the errors aforesaid, and each and every of them, and many more apparent on the face of the record, the defendants, J. Sam Rowland, William F. McKnight and Thomas E. Wood, Railroad Commissioners of Arkansas, pray the reversal of the decree aforesaid, and that the Court be directed to enter a decree dismissing plaintiff's bill of complaint and such other relief as equity and good conscience will show these defendants entitled to receive."

The assignment of errors will not be discussed in the order in which they are presented because such discussion would necessarily call for repetition.

Instead of following the assignments it is thought that the argument may be condensed by being grouped into subjects, each of which will fall under one or more of the assignments of error.

ARGUMENT.

THE COMPANY WAS EARNING A COMPENSATORY RETURN ON ITS BUSINESS IN ARKANSAS.

In the case of Simpson vs. Shepherd, 230 U. S., 352, in considering the case of the Minneapolis & St. Louis Railroad Company, this Court held that while the methods of estimating value and of apportionment were unsound, yet the margin of error which might be imputed to them was not sufficiently great to escape the result that the return was confiscatory. The Court computed the net return from the entire business in Minnesota, interstate and intrastate, and it fell below a compensatory return on the old rates, thereby proving that no reduction could be made without confiscatory results.

In the case of Knott vs. C. B. & Q. Railroad Company, 230 U. S., 474, this Court sustained injunctions against the Missouri rates in the cases of three small roads, and in each of those, the Court considered the net revenue from the entire Missouri business, interstate and intrastate, and found that it was apparent that upon neither the revenue nor ton mile or passenger mile theory of dividing expenses, could any adequate return on the investment be earned. It was held that the errors attributable either to value or apportionment could not be regarded sufficiently great to change the result.

In order to demonstrate that this case does not fall within the principles announced in any of these cases, your attention is called to Exhibit "Y" (Record page No. 2257). The Company's original Exhibit No. 27 contained errors, which were admitted and in lieu of it No. "27 A" was substituted therefor. The State's accountant took said Exhibit No. 27 A and used the Company's figures and methods therein with three exceptions which will be herein set out at length.

This Exhibit takes as the value of the property $15,692,-338.00 which is the amount stipulated to be the value of the property in the year 1907. (Record page No. 906.) As this statement was for the four months period upon which the case was based—that is the four months ended December 31st, 1907—one-third of this amount was used. Substituting the figures in Exhibit "V" for the freight revenue, and the figures in Exhibit "W" for the Maintenance of Equipment expenses, and the figures in Exhibit "X" for the Transportation expenses, and in all other respects using the figures and methods of Exhibit No. "27 A" of the Railroad Company, the result is found to be that the Railroad was earning 6.53 per cent upon its entire business in the State of Arkansas.

As heretofore stated and as will be more fully shown here-

after, this was an unfair period of inquiry selected by the Railroad Company upon which the statistics for preliminary injunction were based. The Railroad was below the normal earning capacity in that period. The great panic of 1907 began in that period, and as the testimony herein shows, the revenue of the road was seriously affected thereby. When this abnormal period is brought to an average or normal conditions, which is shown in Exhibits by the State which are to be hereinafter referred to, it will be seen that the earning of the Railroad was 7.51 per cent upon its property in the State upon its entire business; and upon some of the other averaging processes used by the State to demonstrate the abnormality of this four months period, the return was much higher than 7.51 per cent. Passing, however, that question for the moment, your attention is directed to the changes made in the Company's figures by Exhibits "V", "W" and "X."

Exhibit "V" beginning at Record page No. 2249, is a statement of freight revenue on a received basis, and revenue per ton per mile and tonnage ratios for the four months ending December 31st, 1907.

Mr. Simson testified that Exhibit "V" is an application of the differences described by Exhibits "R," "S" and "U" to the earnings as shown on forwarded basis and applied to Arkansas under the old formula. It is purely an application of the adjustments called for by these other Exhibits just named to the revenue assigned to Arkansas. Along with it, he puts in the percentage statistics which indicates the revenue per ton per mile in these four months is not quite a constant factor until the adjustments are applied. (Record Page No. 624.)

Exhibit "R," page No. 2239, is a statement of deductions from and additions to freight revenue for milling in transit and cotton suspense and gross freight revenue relating thereto as shown in the Company's commodity statistical records of revenue by States, together with corrections of the apportionment to the State of Arkansas of the deduction from and additions to freight revenue, for the four months ended December 31st, 1907.

This shows the adjustment in the revenue accounts in the assignments to Arkansas of certain internal adjustments, being the adjustment of the revenues due to milling in transit, and the adjustment of the revenue due to cotton compressed in transit and re-shipped.

The first column shows the freight revenue in total; the second column shows the amount assigned to Arkansas each month for the commodities named. Under the plan the Company followed, there is an adjustment of the earnings as be-

tween wheat and flour, to practically put the flour on the basis as if it had moved at the flour rate from the point where the wheat originated. The Company had assigned these deductions on a mileage pro rate assigning to Arkansas 12%.

These corrections assigned to Arkansas the percentage of the adjustment to the revenue received from the particular shipment; for instance, wheat, while only .61% of 1% of the wheat revenue is assigned to Arkansas, yet under the 12% basis, $1553.19 is charged against Arkansas, when if the percentage of the wheat revenue assigned to Arkansas should be charged, it would only be .61% of 1%, or $78.95. (Record pages 620-621.)

Mr. Hamilton, accountant for the Railroad, was called by the Railroad in rebuttal, examined by the counsel for the Railroad (R. p. 836), in regard to this Exhibit. He stated it reflected from their Records, for each month, the total gross revenue derived by the Company on wheat, corn, flour and other mill products and cotton. It showed also the amount of such earnings which were apportioned to the State by the Auditor.

In the third column it showed what proportion of the total entire line earnings on these commodities was assigned to Arkansas, expressed in percentages. Then it showed the deductions from freight revenue and the additions to freight revenue on account of adjusting milling in transit and cotton suspense matters for the entire Railroad. Then he states: "I have not any quarrel with the principle of the Exhibits, so far as that goes." He followed the Exhibit out and stated that it shows as a result of applying that method as contrasted with the mileage pro rate that there should be added back to Arkansas earnings in these four months, $7276.04. Then he stated he was curious to see how much of that covered intrastate business, and proceeded to point out that most, if not all of it, affected the interstate and not the intrastate revenue. Therefore, this correction is approved by the Railroad Company. It is unquestionably a sound correction as the Railroad Company assigned the deductions of revenue on a mileage pro rate irrespective of the revenue assigned to the State from these commodities. This merely made the deductions in proportion to the revenue received in the State.

Exhibit "S," Record Page 2241, is a statement of the amount of "charges and prepay—connecting lines" and apportionment to Arkansas on a road mileage basis of 12%, with corrections thereof to basis of the apportionment of the gross freight revenue, for the four months ended December 31st, 1907. This is on the plan of Exhibit "R." The Com-

pany had assigned a flat 12% on a mileage basis to Arkansas.

If the amount was apportioned month by month to agree with the actual revenue distributed to Arkansas against the total revenue, the changes in favor of the amount assigned to Arkansas would aggregate $5,918.90. (Record Page 621-622.)

Mr. Hamilton explains in his rebuttal testimony the nature of this exhibit, and states: "Now, the State accountants have reprorated that amount to Arkansas on the basis of the other earnings which were directly assigned. If I were going to make that kind of assignment, I would do it on that basis." Then he points out that this does not touch any of the intrastate revenue. (Record page No. 838.)

Exhibit "U," Record Page 2247, is a statement of the amount of freight in transit, and the net decrease thereof, shown as deductions in the Company's commodity statistical records of freight revenue, together with an apportionment to the State on a basis of the apportionment of the gross freight revenue, added back to freight revenue in order to resolve the revenue to received basis for the four months ended December 31st, 1907.

Mr. Simson explains that this Exhibit is nothing more than a writing back of the transit and a reduction of the basis of earnings from a forwarded to a received basis. On the forwarded basis, all of the earnings on freight waybilled within the period are taken into the earnings whether the service is completed or not. On the received basis, only the earnings on the waybills on which the service has been completed and the waybill reported by the agent as received, are the earnings taken into the accounts. If the accounts remain on the forwarded basis there will be a big charge against the earnings of the test period which is not a fair test. Statistics in other Exhibits show in this instance it was the biggest charge in a nine year period, and none other like it in the whole period. But putting the account on a received basis, there will be carried into the four months period, all of the freight that was received by the Railroad from the first to the last day of that four months and that which was in transit at the beginning of the four months and in transit at the end of the four months. (Record page 623-624.)

Mr. Simson put into the record a letter which he had received from the Chief Examiner of Accounts of the Interstate Commerce Commission as to certain roads being on a forwarded or received basis. The Chief Examiner states that an examination of the information filed in his office indicates a gradual change to the received basis, and also indicates that the roads mentioned in his letter are accounting for freight

on the received or forwarded basis as therein stated, which shows: Only two are on the forwarded basis, twenty-two on the received basis and six on partially one and partially the other. (Record page 718-720.)

Referring to this Exhibit "U," Mr. Hamilton stated that it referred to the suspense transit freight and shows that if it were all put back and set up four months on a level basis, in allowing for the contraction of business in September, and making a proper assignment of the amounts on the revenue (received) basis, that Arkansas's gross earnings in these four months, would be increased $27,316.22. (Record page No. 839.)

At page No. 851, Mr. Hamilton again refers to this Exhibit and says he does not challenge the accuracy of the figures, but does not agree to the basis upon which it is made—that is placing the accounts on a received basis. It assumes that the in transit freight at the end of December would exactly balance the in transit freight at the beginning of September. (No. 851.)

Mr. Hamilton had therefore stated that these lapovers, as they are called, would equalize each other. He stated, "I think in a four months period the lapover earnings would be inconsequential, especially on intrastate business, where the haul is as short as on our road in the State of Arkansas.

Q. "Then the freight in transit from one month to another, or one period to another, should equalize itself in a period of time?"

A. "That is my judgment. It might not in one month, but I think it would in four months or six months." (Record Page No. 143.)

It is apparent that Exhibit "V" and its three supporting Exhibits, "R," "S" and "U," are established, not only by their intrinsic accuracy, but by the admission of the accountant for the Railroad Company.

Exhibit "W," Record Page No. 2251, is a detail of adjustments to Maintenance of Equipment Expenses for the four months ended December 31st, 1907, as applied to the expenses assigned by the Company to the State in its Exhibit "27 A," under the "old formula."

Exhibit "X," Record page No. 2254, is a detail of adjustment of certain transportation expenses for the four months ended December 31st, 1907. Mr. Simson explains these Exhibits fully, Pages 711-716. It appears that Mr. Douglas, Auditor of the Railroad, had a formula which he had used for many years in making reports to the Railroad Commissions. This is called the old formula, or the Douglas formula. He departed from that formula in many instances in the four months period. He followed the formula in Sep-

tember, and departed from it in the three months following in the instances referred to in these Exhibits. In the main, this is but a reworking of the figures to conform to the September figures, which were the figures which followed the formula. There are some small differences as to interpretation of the formula. Mr. Hamilton, page 850-851, discusses these differences and Mr. Simson explains them fully on the pages stated.

Mr. Hamilton stated that the Douglas method was very close to the method the Company used in this new formula. (Page 870-871). These matters are small and the corrections are made more for the sake of accuracy than for any substantial effect on the revenue. Mr. Simson in following the Douglas formula which he approved, as a better formula than the new one, had not only the authority of Mr. Douglas, but uniform practice of the Railroad for many years in reporting these expenses to the Railroad Commissions in the various states in which it is operated.

While Mr. Hamilton does not exactly agree to all of these details, yet none of his contentions dispute either the accuracy of the figures or the propriety of the method used in the Douglas formula in these particulars where Mr. Simson has made the figures correspond thereto. A reading of Mr. Simson's testimony at the pages given remove any question but that these corrections were properly made.

Therefore, it is confidently asserted that if the Court will follow the detail of these adjustments and corrections that are made in the three Exhibits "V," "W" and "X," you will be satisfied beyond any doubt whatsoever that these are proper corrections to be made, and the placing them in Exhibit "27 A" and using the Company's figures and methods in all other respects, makes a return on the property at the rate of 6.53 per cent upon all the business in Arkansas for the four months period. This is not a normal period to test any rate case through. Mr. Hamilton stated in the last four months of the year 1907 the Frisco had the largest earnings for some years. The panic struck the country in October, 1907, and Mr. Nay testified that the slump began in November. Mr. Hamilton put in the earnings of the Frisco for the four months:

September	$2,241,000.00
October	2,461,000.00
November	2,252,000.00
December	1,979,000.00

(Record page 201.)

These figures show high water mark in October, decided falling off in November, and still more decided falling off in

December. Mr. Nay testified the panic began to be felt on his road in November, 1907. Subsequently these same figures were put before Mr. Nay, who stated that these figures confirm his previous testimony that the slump began the latter part of November and was felt severely then and in December. (Page No. 382.) The greater expense of that period will be developed later.

THE FOUR MONTHS PERIOD OF 1907 WAS BELOW NORMAL.

It has just been demonstrated through Exhibit "Y", which is nothing but an adaptation of the Company's figures in Exhibit "27 A" to the value of the property as stipulated with the corrections made of manifest errors as shown in Exhibits "V," "W" and "X" that the Company was earning in Arkansas during the period of inquiry 6.53 per cent upon all of its business, but the State's contention goes to the further point that this was not a normal return, and average conditions show that the Company was earning 7.50 per cent to 8 per cent on its property in Arkansas on all of its business in said State.

The State objected to taking the statistics of the 1913 two months test and transposing them back to determine the condition of the road in 1907 upon which the preliminary injunction was granted. To meet this point, Mr. Hamilton stated that he had in progress of preparation figures as to traffic and operating conditions which would show that these two months could be taken as representative of any year and that they would apply to 1907 as well as to 1913. (Record page 91.) And he further stated that the assumption of extra cost alleged to have been developed in the two months test of 1913 of intrastate traffic was reflective of the cost relationship of the two classes of traffic in 1907. That it would be shown there would be a normal relationship between 1907 and the test period of two months. (Record page page 93.)

The Court admitted the introduction of the testimony with the understanding that such evidence connecting the periods would be introduced. Before it was introduced, Mr. Nay was called upon by the Railroad to define what would be a normal relationship of one period to another, and what data should be gathered to prove the normality. He gave these as the controlling factors:

First: The road mileage. It would be necessary to consider whether there had been a change in the mileage of the road between one period and the other.

Second: The load per train. That is, the number of tons per train or number of passengers per train.

Third: The average length of haul of freight or passenger.

Fourth: The relationship of empty car movement in case of freight to the loaded car movement.

Fifth: The relationship of interstate and intrastate traffic, if they were substantially the same. That is, if substantially the same percentage of the total traffic was intra and inter, it would indicate same conditions.

Sixth: The assigned expenses in proportion to the traffic. That is, in this case the proportion of Arkansas expenses to the total of the road and the proportion of the traffic to the proportion of the road. If in one period the expense would be, say 15 per cent of the total and the traffic should be, say 18 per cent, and in another period the expenses would be 13, 14, 16 and 17 per cent and the traffic be within a few per cent, it would indicate somewhat similar conditions.

These six items indicate a similarity or difference in condition according to whether the relationship of the various items was similar or different. No one of them could be considered to govern, but they should all be taken into consideration. (Record page 441-442.)

Thereafter Mr. Hamilton introduced a series of Exhibits known as the Normality Exhibits. (Record page 448-457.) These Exhibits are numbered 34 to 41, inclusive, and your attention is invited to them.

Exhibit 34 is the average miles per freight car per day for the entire line for six years and for the last four months of six years. It shows a variation in the years from 22.75 to 25.45 and in the four month period, from 21.56 to 26.46.

Exhibit 35 shows the ratio of the entire line earnings for the last four months of the calendar year compared with the total earnings for each of those fiscal years. There is a variation from 35.75 per cent to 36.98 per cent, the largest percentage of earnings of any of the four months of the fiscal years being September, October, November and December of 1907 to the fiscal year ended June 30th, 1908, that being 36.98 per cent.

Exhibit 36 is the ratio of the Arkansas earnings to the entire line earnings for the four months ended December 31st, 1907, and for the years 1910, 1911, 1912 and 1913. The variation is from 9.94 per cent for said four months to 10.47 per cent for the year 1912. This is followed by a comparison assuming the 3c passenger fare and the Court traffic freight rates had been charged throughout all the periods.

Such assumption raises the percentage of the four months period from 9.94 to 10.43 per cent.

Exhibit 37 gives the road mileage operated at the various periods. It shows an increase in mileage of the entire line of 19.58 from December, 1907, to December, 1913, and an increase in Arkansas mileage for the same period of 5.49 miles.

Exhibit 38 shows train miles, net ton revenue freight one mile, revenue passengers one mile, per mile of road per day in the State of Arkansas for the four months ended December 31st, 1907, and the fiscal years of 1910, 1911, 1912 and 1913, and in the months of November and December, 1913. In freight train miles, it shows 6.4 in four months of 1907, and 4.3 for November and December, 1913. Passenger train miles shows in the four months of 1907, 4.6 and the two months of November and December, 1913, 4.4. Of net tons of revenue freight one mile, it shows for the four months of 1907, 1,417. For the months of November and December, 1913, 1,280, and more or less variation in each year intervening; of revenue passengers one mile it shows for the four months of 1907, 197 and for the months of November and December, 1913, 271, the former being the lowest and the latter the highest of the periods.

Exhibit 39 shows the average haul of the freight and passengers in Arkansas, State and interstate, for the four months period of 1907, the fiscal years of 1910, 1911, 1912 and 1913 and the six months ended December 31st, 1913; the intrastate haul varying in those periods from 21.26 to 27.97, and the interstate haul varying from 76.20 to 85.58. On the passenger side the intrastate haul varying from 16.31 to 19.06, and the interstate haul varying from 39.89 to 47.67.

Exhibit 40 shows the ratio of intrastate and interstate traffic to the total in Arkansas—freight and passenger—for the four months period of 1907, the fiscal years of 1910, 1911, 1912 and 1913, the months of November and December, 1913. For the year 1913 intrastate percentage of ton miles was 2.81 per cent which was the lowest and the highest was the two months of 1913, 3.89 per cent. For the four months of 1907 it was 3.65, the interstate, of course, being the remaining difference between these figures and 100. On the passenger side the intrastate was lowest in 1912, 31.80, and the highest in four months of 1907, 43.77, and the next highest in the two months of 1913, 40.55.

Exhibit 41 gives the Arkansas proportion of the entire line operating expenses and the traffic compared for the four months of 1907 and the fiscal years 1910, 1911, 1912 and 1913, and the months of November and December, 1913. The percentage of the entire line operating expenses assigned to Ar-

kansas was highest in the four months of 1907, being 11.80 per cent, and the lowest in November and December, 1913, being 10.44 per cent. (A variation will be noted between the period of inquiry and the test period of 1.36 per cent.) The net tons one mile show highest for the four months of 1907, being 11.28 per cent, and the lowest for the test period of 1913, being 9.48 per cent, a difference of 1.80 per cent. On the passenger side of it, the highest was for the two months of November and December, 1913, being 11.14 per cent, the lowest being for the year 1913, 9.75 per cent; the four months period of 1907 being 10.25 per cent.

Mr. Simson, for the State, made up a series of Exhibits based on these normality Exhibits of the Railroad.

It developed in his cross-examination that he and his accountants had made a mistake in their computations of the costs. The mistake is summed up (Record 751) wherein Mr. Simson stated that after examining the records he found that Exhibits "H," "I," "J," "K," "L," "M," "N," "O," "P" and "Z" each contained errors, in that the earnings of the lines north of the Red River had been set up and the expenses with which these earnings were compared included from two to five of the short lines of other Frisco roads in Texas which were not parties to the litigation.

Mr. Simson explains, page 781, that the error was made in his office through a misconception of what he and his assistants in discussing among themselves, considered the entire line. They had made up statistics covering the entire Frisco line, including its various short lines in Texas, and also statistics covering the line north of the Red River which is the Frisco railroad in this suit.

Part of his force worked on one set of the figures and the other part on the other and it was not discovered that the revenue and the expenses did not match up as being upon the same mileage until brought out on cross-examination. (R. 782.)

Since he discovered it, he reconstructed his Exhibits and corrected the errors throughout, and Exhibits "H-1," "I-1" "J-1," "K-1," "L-1," "M-1," "N-1," "O-1," "P-1," and "Z-1" were filed in substitution of the original Exhibits. The original Exhibits by stipulation are not printed, the substituted ones taking their place. The principles of them are identical, the only difference being the correction of the error in the original ones.

The explanation of these Exhibits is given when the original ones are introduced (pages 615 to 630). The corrected figures, applicable are given in the Exhibits themselves and on the introduction of substituted Exhibits by Mr. Simson. (R. 781 to 793.)

Exhibit 'H-1'' (R. 2281) is a statement of the earnings and operating expenses of the entire line for the five years ended June 30th, 1908, 1910, 1911, 1912, and 1913, and the four months ended December 31st in each of those years, with the percentage relationship of the four months to the year of each and for the period.

It begins with the Railroad's Exhibit 35, which showed the earnings for those years and for each of the four months in those years and the relationship of each of those four month periods to the years. Then follows the operating expenses similarly set up and the percentage relationship. The operating expenses are divided according to the primary accounts, to-wit:

Maintenance of Way and Structures, Maintenance of Eqiupment, Traffic Expenses, Transportation Expenses and General Expenses. It shows that the average ratio of the earnings of the four months period to the years, is 36.34 per cent, and the average of the expenses of the periods to the years is 36.35 per cent; but this does not spell the entire story, because this average is made up of these five primary accounts and those which are small in amount as Traffic and General Expenses, are also small in percentage, being respectively 34.79 and 34.58. Transportation is the biggest and its percentage is 34.76, which is also small; but Maintenance of Way and Structures, which is a large amount, being over $10,000,000.00, is 41.09 per cent.

Exhibit ''I-1,'' page 2283, is a statement of earnings and operating expenses for the four months ended December 31st, 1907, and the years ended June 30, 1910, 1911, 1912 and 1913 for the entire line with the respective proportions assigned to Arkansas under the Company's new fomula with the per cent relationship for the periods named.

The Exhibit ''H-1'' shows the relationship in earnings and expenses, taxes and rentals, according to primary accounts in each of the last four months of said calendar years compared with the entire fiscal year for the entire line, while Exhibit ''I-1'' shows the relationship in earnings and expenses assigned to Arkansas of the four month periods in each of the said calendar years under the Company's new formula (Exhibit ''1''). Thus:

The average assignment of earnings to Arkansas for each of the four month periods was 10.22, while the average expenses assigned to Arkansas for each of the said periods was 10.32.

Again, the average is brought down by low averages on small items, as Traffic and General; the Maintenance of Way expense being 14.02.

Exhibit "J-1" is a statement of available net income and return on the value of the property in Arkansas for the four months ended December 31st, 1907, adjusted to average conditions as to earnings and operating expenses according to Exhibit "H-1," and the percentage proportions assigned to Arkansas taken from the results of the Company's new formula as constructed in "I-1." It shows a percentage of the return upon the property on all the business in Arkansas, 6.62 per cent.

A clearer explanation of this can be obtained by reading Mr. Simson's testimony at page 616 where he introduced these Exhibits and followed up by the corrected figures, beginning at page 783.

Exhibit "H-1" takes the gross earnings and expenses by I. C. C. classification for the five fiscal years mentioned, with the amount of earnings and expenses in each class for the same identical four months in each of those years and obtained a proportion of earnings and expenses in the last four months of those years to the year, and then takes an average of earnings and expenses for the five year periods.

Exhibit "I-1" ascertains under the Company's new formula the proportion of earnings and expenses assigned to Arkansas in each of the four month periods as compared with the year. This is made without any of the adjustments or modifications which the State makes as heretofore explained. The plan is worked out on the principle that the equation theory carries with it the idea that each period is equal to each other period in order to make the equation the proper one.

Therefore, having obtained these averages they are applied to the four months ended December 31st, 1907, which is reduced to a normal basis thereby which is necessary to make the equating method a proper one. This principle is applied and results in Exhibit "J-1," which shows a return upon the property of 6.62 per cent.

The next Exhibit is "K-1," which is the same in principle as "J-1," except that he reduced the percentage to a mere mathematical average by dividing the aggregate by five instead of taking the actual averages. This is a flat mathematical average, the other reduced to the proportion of each dollar earned in the year and that earned in the last four months of the year, and the expenses likewise. (R. 617-618.)

The return computed on the flat mathematical average instead of the actual average, is 8.03 per cent upon the property in Arkansas on all the business.

Exhibits "L-1" and "M-1," pages 2289 and 2291, are identical with "H-1" and "I-11" except that the computations

are made over a six year period instead of a five year period.

The computations in "H-1" and "I-1" being over the same periods that the Company equated revenue and expenses back to 1907, it was thought to make an Exhibit of the equation periods reduced to the normal average for those five years, would be illuminating.

These Exhibits are even more illuminating as they add another year, included in which are the test months of November and December, 1913. These computations are likewise made on the new formula, and Exhibit "M-1" shows a return on the property from all the business in Arkansas of 6.89 per cent.

Exhibit "N-1" is the same as "I-1" except the old or Douglas formula was used instead of the new formula, Exhibit "I." The result of using the old formula in the assignment of expenses and earnings to Arkansas, and reducing the four months of 1907 to an average or normality, results in a return on the property in Arkansas from all the business of 7.51 per cent. This is the Exhibit which Mr. Simson testified in his opinion was the logical one. While it is based on the old formula without the adjustments which are carried into Exhibit "Y," yet when an average period is taken, the errors are minimized by the average. (R. 641-718.)

There seems to be some misunderstanding as to what was the Douglas Formula. The Company's Exhibit 23 shows that the Company had for years used a formula to report to the Railroad Commissions. This formula assigned earnings and expenses to the given State and is called the Douglas formula. This is the one that Mr. Simson approved and said was a better formula than the new one for that purpose.

Exhibit "23" states that the Company also had a formula for dividing expenses between freight and passenger which it had used uniformly for many years for comparative purposes in observing its own operations. This is not the formula which Mr. Simson has approved, although Mr. Hamilton seems so to indicate in his rebuttal testimony. (R. 855.)

Mr. Simson made no calculations beyond the point of assigning earnings and expenses to the State and did not go into any divisions between passenger and freight, state and interstate. This has been repeatedly stated in his testimony both in the direct and cross examinations.

Exhibit "P-1" (R. 2297), is an application of the old formula to the percentage of the assignments to Arkansas on a mathematical average, and is the same as "K-1" except the old formula instead of the new one is used. (R. 618-619.)

It produces a return on the property from all the business in Arkansas of 9.03 per cent.

"Z-1" (R. 2299), contrasts and compares the result shown by Exhibit "Y" to the normal average for the four months as shown in Exhibit "O-1."(R. 627.)

It will be remembered that "Y" is the State's Exhibit taking the place of "27 A" of the Company. It contains the adjustments and corrections which are necessary in order to show the true condition of earnings and expenses for the four months of 1907.

This Exhibit shows a return upon the property from all the business in Arkansas, 7.51 per cent. It shows that the average conditions for the five year period applied to the true condition as shown in Exhibit "Y" is .98 per cent more than the actual conditions.

In other words, Exhibit "Y" shows a return upon the property from all the business of 6.53 per cent for the four month period; when that is reduced to average conditions, the return is 7.51 per cent.

The amount of return shown in "O-1" and "Z-1" is identical—7.51 per cent.

Exhibits "AA" and "BB" (R. 2259 and 2261), are applications of the same principle to the fiscal year ended June 30th, 1913, as was made in the preceeding Exhibits for the four months ended December 31st, 1907, "AA" being on the new formula and "BB" being on the old or Douglas formula.

"AA" shows a net return from the property in the State from all business is 7.69 per cent, and "BB" a return of even 8 per cent. For explanations of the make-up of the Exhibits, see Record pages 628, 630.

In the year ended June 30th, 1913, the Company was charging 3c per mile passenger fare and was applying the Court Tariff to freight.

Mr. Simson's attention was called to this fact and also to the amount of diminution on freight and passenger traffic worked out in Company's Exhibit "22," which applied the 2c rate and Standard Freight Distance Tariff No. 3 to the revenue received under rates prevailing.

This is what may be called the diminution tables. It assumes the same movement, freight and passenger, would have occurred under the enjoined rates which actually occurred upon the existing rates, no more, no less.

Mr. Simson made the deduction from the revenue shown in Exhibits "AA" and "BB," assuming that the 2c rate and the Commissions Freight Tariff had been applied to the movements during said year.

The result is that under Exhibit "AA" the return would have been 6.9 per cent instead of 7.69 per cent, and under "BB" would have been 7.23 per cent instead of 8 per cent.

If the correctness of the principle of applying diminution tables be accepted, then it is found that the actual return for 1913 under normal conditions would have been either 6.9 or 7.23 per cent, according to whether the new or the old formula was applied.

While somewhat out of the order of the argument, it might be well at this place to consider the proposition involved in the diminution tables.

Mr. Simson stated that it was an impossible assumption when you have statistics of a certain number of passengers traveling a certain number of miles for a given year under a 3c rate, to assume that under a 2c rate just equally that same number of passengers would travel just equally that same number of miles. That as to freight, which is less subject to money conditions, and does not make excursions at low rate, or travel at a less rate purely because of the lesser rate, yet it is a fact that the change in a rate affects the direction of traffic, and therefore the earnings of particular portions of the line and the ton mileage on it. (R. 792.)

So far as freight movement is concerned, the Court can well consider the hundreds of cases decided by the Interstate Commerce Commission wherein it is shown that a change of rate will deflect the traffic from one jobbing center to another. The jobbers of Little Rock and Memphis, for illustration, have had many complaints before the Commission over the interstate rates prevailing in and out of Memphis and Little Rock. Each will assert most positively that the rates in or out of the other city will give that city an undue advantage and deflect natural traffic to it which does not belong to it.

A major part of the work of the Interstate Commerce Commission is adjusting rates between great jobbing and manufacturing centers. In view of these well known facts, to assume that all the freight which would have moved under the Standard Distance Tariff No. 3, which is 25 per cent to 33⅓ per cent lower than the Court Tariff, would have been identical with the movement under the Court Tariff, is to assume a theory which does not exist in fact.

On the passenger side of the problem, Exhibit "42," page 2149, of the Railroad Company effectually disproves the identity of movement under different rates. This Exhibit was put in by the Railroad Company to prove that interstate passengers avail themselves of the 2c intrastate rate by buying at border points and breaking their interstate journey by obtaining intrastate tickets while in the state.

Mr. Hamilton introduced this Exhibit and testified of it (R. 458-459). He explains that June, 1913, was the last full

month in which the Company operated on a 3c fare and August, 1913, was the first full month in which it operated on a 2c fare in Arkansas (since the injunction) and the Exhibit contrasts August, 1913, with August, 1912, the same month of the previous year on a 3c basis and June, 1913. It gives the border stations in the State and compares the traffic under the two rates at them and shows a large increase, and then compares stations in the interior of the State where passengers would have no incentive to re-ticket to cheapen the cost of an interstate journey, with these border stations. (R. 459.)

The Exhibit states that it gives these border line stations and "also tables showing the ticket sales to Arkansas points from interior Arkansas stations, sufficiently removed from the border to make it no incentive to interstate passengers to re-ticket there." (Page 2, Exhibit 42.)

The border towns are Osborn, Rogers, Arkinda, Mammoth Spring, Yarbro and Summers; the interior stations are Jonesboro, Hoxie, Hope, Ashdown, Wilson and Luxora.

Mr. Hamilton and Mr. Nay testified very positively that there was no stimulation of passenger traffic under the 2c rate other than the fictitious stimulation produced by buying at border points tickets by interstate passengers to avail themselves of the 2c rate, but this Exhibit is the only concrete evidence on this subject, and it is quite interesting.

Osborne shows an increase in percentage of 1675 of August, 1913, over August, 1912, but there were only eight cash fares in August, 1912, and in June, 1913, 12 cash fares and one hundred and forty-two in August, 1913, and the ticket sales were eight in August, 1912, twelve in June, 1913, and 142 in August, 1913.

At Rogers there was a percentage increase of 71. The statistics there show that Rogers is a good sized town, they show an increase from August, 1912, to June, 1913 of 467 ticket sales and 48 increase in cash sales. These sales are natural increase over those of previous months, and hence all of the 71 per cent was not border line increase.

Arkinda shows an increase in percentage of 431 which represents an increase in cash fares of 598 and of ticket sales of 759.

Mammoth Spring shows an increase in percentage of 157, but there were only twenty-two cash fares there in August, 1912, and nine in June, 1913, as against 279 in August, 1913, and the ticket sales increased 1,028 from August, 1913, over August, 1912.

Yarbro shows a .40 per cent increase. There was an increase of 241 cash fares and 233 ticket sales.

Summers shows 369 per cent increase on 354 cash fares and 436 ticket sales.

Add the cash and ticket sale of August, 1913; deduct the cash and ticket sales of August, 1912, and the result is 6,208, which represents the total border line increase in Arkansas during this month. Not much over one month's traffic at Jonesboro.

Now turning to the interior stations where as testified by Mr. Hamilton and stated in the Exhibit there was no incentive for this border line buying and which stations would represent the actual increase of intrastate traffic. Jonesboro is the first.

The railroad fares there show an increase in August, 1913, over August, 1912, of 1445 or 33 per cent. This is the largest town that is shown and for an interior town it is rather remarkable that when the rate was reduced 33⅓ per cent that on the two test months contrasting the effect, the travel had increased 33 per cent. This would be absolute proof, if this station be taken as representative of all interior stations, that the decrease of the rate produced a corresponding increase of the travel.

Hoxie is the next interior station, as also shown by the figures a large station. There was likewise an increase of 33 per cent there.

Hope is the next one, and it is smaller than Jonesboro and Hoxie, it shows a 7 per cent increase.

Ashdown, which is somewhat larger than Hope, shows a 31 per cent increase.

Wilson, about the same size as Ashdown, shows a 28 per cent increase, and Luxora, also a town considerably larger than the last two, shows a falling off of 1 per cent. Except Luxora, which is probably accounted for from other causes, as there is no increase shown here and a marked increase on all the other interior towns, the increase is almost as great as the percentage of reduction in rate. Mr. Hamilton has made a computation which effectually disposes of the theory that the same number of passengers travel when the different rates previal. He stated (R. 458) that he took the actual intrastate passenger travel for the year ended June 30th, 1914, and eliminated from it such passengers as their train auditors investigation showed to have re-ticketed (this Exhibit 42 also showed investigations through the train auditors of the re-ticketing), who were really interstate passengers. After deducting what their investigation led them to believe was the interstate passengers who had availed themselves of this privilege, he found that there had been an increase in bona fide intrastate passenger miles of 21 per

cent, but a decrease by reason of reduction in rate, in intrastate passenger revenue of 14 per cent. "The passengers went up 21 per cent; the revenue went down 14 per cent."

The diminution tables assumes an increase of 33⅓ per cent, and assumes that there was no increase in intrastate passenger miles. Therefore, it is apparent that the diminution tables are of no value whatsoever when in fact there is only a decrease of 14 per cent.

The Interstate Commerce Commission in the Western Passenger Fare Cases considered this proposition and said:

"It has been suggested that an increase in the existing fares in the territory here in question will result in a diminution of travel and a corresponding shrinkage in the revenues of the carriers. Travel is influenced by so many different factors that statistical proof of the existence of causal relations between the volume of the movement of passengers and the level of the fares is generally impossible. The general deduction that travel may be influenced by the level of the fares will probably not be challenged in any quarter; nor can there be found much ground for questioning the statement that where the change in fares is decidedly marked, a corresponding change in the amount of travel may be attributed wholly or in large part to such change. On the other hand, where changes in fares are relatively slight, it is doubtful whether any appreciable effect upon the volume of passenger movement will result therefrom. It is likewise obvious that that class of passengers to whom the amount of the fare represents practically the entire expense of a trip will be influenced much more by a change in the level of fares than the class of travelers to whom the charge for transportation represents only a fractional part of the expense of a trip. These observations apply to regular movements of passengers rather than to special movements resulting from the publication of excursion or other reduced fares put into effect by railway companies to meet special situations. However, much or little statistical proof can be adduced in support of any of these generalities is immaterial for our purposes." (37 I. C. C., 1.)

The Court considered this subject in his opinion (R. 923). The Court gives part of the table in Exhibit 442. By some clerical mistake, only the ticket sales column is given, whereas the heading calls for the combined ticket sales and cash sales. The Court said "In the interior stations the increase was not so marked, still noticeable," and then gives the percentage at Jonesboro, Hoxie, Ashdown and Wilson. The Court said "In these interior stations a very large part, if not all of this excess, is attributed to the fact that the

State rate was only 2c rate; the interstate rate was 3c per mile, is beyond question."

The opinion of the Court in regard to Jonesboro, Hoxie and these other interior towns is exactly to the contrary of the evidence given by Mr. Hamilton and the statement in the Exhibit that these towns are selected "Sufficiently removed from the border to make it no incentive to interstate passengers to re-ticket there."

The Interstate Commerce Commission entertains quite a different view of this subject, as shown in the excerpts from its opinion just quoted.

Returning to a consideration of the Exhibits placing the four month period of 1907 upon a normal condition, your attention is called to the statement of this Court, as expressed by Mr. Justice Hughes, that "The wide variation in results obtained on the different hypotheses, each of which is earnestly supported in argument, illustrates the necessity for the keeping of suitable accounts at least during typical periods which will furnish correct statistical information bearing upon the cost of intrastate transportation as compared with interstate, instead of leaving a matter of such intricacy to general expressions of judgment." (230 U. S., P. 559.)

To put the though otherwise: If statistical information is used as a basis to attack rates, that information must be during typical periods. These Exhibits demonstrate that the four months ended December 31, 1907, were not normal. The averaging process is criticised by Mr. Hamilton in his testimony in rebuttal, but this averaging process is but an application of the normality statistics filed by Mr. Hamilton himself, and in carrying them to completion, telling the whole story instead of a part thereof. His Exhibit 35 gives the proportion of the four month periods for the earnings alone.

Mr. Simson accepted that as far as it went, but went further and reduced them to typical periods or as generally referred to in this record, normal periods. Mr. Nay laid down six rules (441-442), which have heretofore been set out to determine the relation of one period to another.

The first, as to a difference in mileage, in this instance, it is small. The next is the number of tons per train and number of passengers per train. The next is the average length of the haul. Each of these have been shown and their variations pointed out. While in some instances small and others great, yet the extent of those variations can best be determined by reducing the expenses and revenues to an average.

The next point which Mr. Nay called for was the rela-

tionship of empty car movement, and it is just like the other matters of expense to be worked out through an average.

The fifth point was the relationship of interstate and intrastate traffic. The variations in it have been shown in the Exhibit 40.

The sixth principle announced by Mr. Nay is the one that is largely the predicate for Mr. Simson's Exhibit, that is the relationship of Arkansas to the entire line.

Interstate and intrastate traffic are so interwoven that it is difficult, if not impossible, to separate them. The business of a railway system is conducted as a whole; each state is but a segment.

For instance, the repairs of passenger and freight cars are considered as a whole and divided between States and the entire line in the relation that the passenger car miles and the freight car miles respectively bear to the whole passenger car miles and the freight car miles.

Therefore, the expenses assigned for the repairs of equipment will necessarily depend upon the relation of the movement in the given state to the movement on the entire line. While a somewhat different plan is worked out for locomotive repairs, the principle is the same.

The General expense of every kind and character is assigned to the State on the overhead basis and that depends upon the assignment of all the other expenses.

The revenue is likewise affected by the relation of the State to the entire line as the interstate revenue is made up of movements partly in Arkansas and partly in other States.

Mr. Hamilton criticised the averaging basis for not including the taxes and hire of equipment. Mr. Simson answered that criticism by pointing out that in the equating process used by the railroad through which it transposed a two months test period of expenses between state and interstate back to 1907, and by which it transposed expenses and earnings of 1913 back to 1907, that hire of equipment and taxes were not equated but the actual figures for each year were taken.

His Exhibits were merely to show what would be a typical period along the same line that the railroad had assumed to equate one period into another one. He states that hire of equipment, while not classified by the Interstate Commerce Commission as operating expenses, yet is so closely analygous to it that it would be proper to take an average of it although the railroad had not done so in its equating Exhibits.

He makes a calculation, showing that it would not effect any change in percentages. (R. 890.)

Taxes, he said, should not be averaged, as each year takes care of it on the basis of the value of the property of that particular year.

Mr. Hamilton puts in Exhibit 58 in which he averages taxes, hire of equipment, and the value of the property for a series of years. Mr. Simson says that this system is absurd, and Mr. Hamilton says that he does not believe in it (R. 850), and therefore it may well be dismissed as no one will stand sponsor for it.

It is confidently submitted that these calculations demonstrate that had a typical period been taken, the railroad's return upon its property would have been upwards of 7.50 per cent.

It would be much better to have the actual conditions for a series of years instead of a four months period. But if the case is to be tested on a four months period, as the railroad seeks to have it done, that four months must be examined to see if it is typical of the whole. If the figures are not available, then strike an average and make it typical; the next best result is found, and that is what is done here.

NO CONFISCATION SHOWN EXCEPT THROUGH THE FORMULA APPLIED TO INTRASTATE.

No one can question seriously after going through the preceding Exhibits that for the four month period of 1907 the Railroad was actually earning upon all of its property in Arkansas at least 6.50 per cent, and that it is equally certain that on average conditions it was earning at least 7.50 per cent, and even if the "Diminution Tables" are applied to the earnings where a 3c passenger rate and the "Court Tariff" were in effect that the road was earning at least 7 per cent.

These statistics having established these facts clearly and convincingly, although no such burden is on the State in a Rate Case, the situation then develops almost precisely as it did in the Iron Mountain and St. Louis Southwestern cases.

Mr. Justice Hughes, after stating the earnings interstate and intrastate, the value of the property as agreed upon, the operating expenses together with taxes and rentals, showing that the Iron Mountain was making an annual rate of return of 7.50 per cent upon the value of its property, upon its entire business, and the St. Louis Southwestern of more

than 10 per cent, said: "The showing thus made, of the returns from the combined business, makes it entirely clear that the ultimate conclusion must depend upon the certainty of the proof with respect to the segregation of the results of the intrastate operations. That is, the controlling questions concern the division of the expenses between interstate and intrastate transportation, and the determination of the share of the total value of the property which is assignable to the latter and upon which the rate of net return is to be computed." (Allen vs. St. Louis, Iron Mountain & Southern Railway Company, 230 U. S., on page 557.)

There is no presumption that intrastate traffic is more expensive than interstate traffic. In the case known as the "Western Passenger Fares" decided December 7th, 1915, by the Interstate Commerce Commission, 37 I. C. C., 1, the Commission definitely declined to make such assumption is regard to intrastate passenger service. See page 30.

The Commission stated: "There are, it is true, two terminals involved in all state journeys and usually only one in any one state in an interstate journey. But the average haul for the interstate passenger is greater, and the character of the equipment used in the interstate business will average somewhat higher than in the strictly intrastate business."

In this case there is absolutely no testimony of any extra cost of state over intrastate business other than that worked out through this Formula, and which Mr. Hamilton and Mr. Nay say is to be substituted for the opinion evidence on this subject given in preceding Rate Cases.

Eminent railroad officials such as attracted the attention of the Court in Simpson vs. Sheppard, 230 U. S., 352, did not appear in this case to support the extra cost theory. It is supported solely through the Formula. The Formula is supported by the Comptroller of the Rock Island Lines, one of the authors of this Formula, whose road has a similar case in Oklahoma under it, and Mr. Hamilton, the Supervisor of Efficiency of the Frisco Road. One or two other witnesses testify as to one or two particular items in it.

The learned trial judge assumed that the intrastate was more expensive than the interstate, and stated, "That it must be more requires no expert's testimony." (R. p. 929.)

Then the Court proceeds to state that the more frequent stops and starts causing damage to the engines and cars, the fact that the local trains have to do their own switching at all intermediate stations causing a loss of time for which compensation is made to the train crew, and other matters relating to the performances of the local trains, contribute to the additional cost of local trains as compared with the through.

His statement of the reason for this extra cost is almost identical with the testimony reviewed by Mr. Justice Hughes in the Minnesota Rate Case on pages 462-464. (Minn. Rate Case, 230 U. S., 352.)

The testimony of Mr. Hamilton, page 205 of the record, is that the local train is made up of 85 per cent interstate and 15 per cent intrastate, or, to be exact, 85.40 per cent interstate and 14.60 per cent intrastate.

It is rather difficult to see how the heavier expense of the local train can work out a heavier expense for the intrastate traffic when over 85 per cent of its load is interstate traffic.

Aside from the presumption of the compensatory character of the rates which the State may rest upon until overcome by clear and convincing evidence, there are certain statistics in this record approved by the railroad accountants which effectually dispose of any theory that the net results of the intrastate are not as compensatory as the net results of the interstate. These figures were compiled by Mr. Simson and approved by Mr. Hamilton. (R. pp. 874-876.)

In 1907 the Arkansas intrastate revenue per ton per mile was 24.79 mills. The interstate revenue per ton per mile in Arkansas was 7.76 mills. The combined Arkansas revenue per ton per mile was 8.38 mills. The revenue per ton per mile for the entire line of the Frisco was 9.52 mills.

The passenger revenue per passenger per mile intrastate in Arkansas during 1907 was 20.07 mills; that is two cents and a small fraction; on the interstate passenger business in Arkansas was 18.9 mills and on all passenger business in Arkansas 19.4.

This Formula on page six makes certain assumptions. It assumes first: that the terminal cost per ton of state freight is neither more nor less than terminal cost of interstate freight at the same station in carloads or less than carloads respectively; second, that the line cost per gross ton mile of state freight is neither more nor less than line cost of interstate or transtate freight on the same train in either carloads or less than carloads. That as an average the terminal cost per ton interstate freight going into, coming out of, passing through a State is the same at both terminals, and the same as the average terminal interstate freight within the the State for carloads or less than carloads respectively. And the same principle is applied to passengers.

These statistics show that the road was receiving more than one mill per mile for each passenger hauled intrastate

over each passenger hauled interstate during the year 1907, the 2c year that is being contested. They show that for each ton of freight intrastate hauled within the State that the company received more than three times as much revenue per ton per mile as they did for freight hauled interstate.

The only possible difference in the cost of the two classes of traffic is the terminals as pointed out by the Interstate Commerce Commission. This is compensated even on the same passenger rates by the character of the equipment used in the intrastate and the longer haul of the interstate, and in this case by the higher rate prevailing in the intrastate over the interstate.

On the freight side three times the revenue per ton per mile compensates for the extra terminal cost. Yet in view of these facts the extra cost theory worked out under the formula in Exhibit 61, the last word of the railroad on the subject, gives this grotesque return for the four months period of 1907: The return on the total business is 4.50 per cent (whereas it should be 6.51, if the corrections which were undisputably established and practically agreed to in Exhibits "V," "W" and "X" were made as shown in the State's Exhibit "Y"), a deficit is shown on intrastate freight, a deficit on intrastate passenger, a return of 5.61 per cent on interstate freight and a return of 7.05 per cent on interstate passenger. Yet this same road with others, in the Western Passenger Fares Case, convinced the Interstate Commerce Commission "that the business done by passenger train service is less profitable on the whole than is the freight service in this territory." (37 I. C. C. on page 33.)

No other word than grotesque can adequately describe such a result. The interstate freight showing a return of 5.61 per cent on rates producing revenue less than one-third per ton per mile than the intrastate freight, and the intrastate freight showing a deficit of $9,308.59. If the corrections were made on this Exhibit as they were in "Y" it would raise the return on intrastate freight rate to probably a "trace," and on interstate freight about 7.50 per cent.

One reason given by the trial court for the extra cost of intrastate carried on the local trains was a quotation from Mr. Nay as to how seriously the shorter haul affects terminal expenses to this effect: "If the terminal expense is thirty cents per ton on a haul of thirty miles, it will make one cent per ton every mile, while if the haul is sixty miles it will only amount to one-half cent a mile." (R. p. 929.)

Mr. Nay doubtless did not intend this to be taken as the Court took it as affecting terminal expenses, but it is an explanation as to how terminal expenses are spread over the length of the haul.

Exhibit 39 of the Railroad Company, Record page 2143, shows an average intrastate freight haul for 1907, 21.26 miles; for the six months of 1913, 25.75 miles. Corresponding interstate freight haul 81.97 miles, and for the last six months of 1913, 76.20 miles.

As these extra cost relationships grow out of the test period of 1913, which was brought by *nunc pro tunc* proceedings back to 1907, the 1913 figures are the comparable ones here.

In round numbers the interstate freight haul was three times that of the intrastate haul, and the intrastate revenue more than three times per ton per mile the interstate.

Certainly such established facts should bring out close relationship between the net return on the property when the terminal cost is no more per ton intrastate than interstate and no more per mile intrastate than interstate, and yet the return worked out through this Formula is the grotesque one indicated.

Following the matter up on the passenger side this Exhibit 39 shows in 1907 the state passenger haul was 18.84 miles; interstate for the same period, 42.59. For the period containing the test months the intrastate haul was 19.06, and interstate 39.89.

Thus it is seen the passenger haul interstate is approximately double that of the state, while the rate per passenger mile is 1.17 mills more per mile than the interstate passenger per mile. Yet this Exhibit 61 in application of the Formula brings out a deficit on intrastate passenger $4,630.31 and a return on interstate passenger of 7.05 per cent, and if corrected by Exhibit "Y" would increase to over 8 per cent.

Certainly in view of these facts the Court must approach the subject of the extra cost of intrastate traffic with no presumptions that it exceeds the interstate, for there is naught in this record save the Formula tending to prove it and much to refute it.

Your attention is next invited to the Formula itself.

THE FORMULA SUSTAINED ONLY BY OPINION EVIDENCE.

Mr. Justice Hughes, speaking for this Court in the case of Allen vs. St. Louis, Iron Mountain & Southern Railway Co., 230 U. S., on page 559, said:

"The wide variation in results obtained on the different hypotheses, each of which is earnestly supported in argument, illustrates the necessity for the keeping of suitable accounts, at least during typical periods, which will furnish correct statistical information bearing upon the cost of intrastate transportation as compared with interstate, instead of leaving a matter of such intricacy to general expressions of judgment."

Ostensibly to comply with what was said by the Court in this, and other cases decided at the same time, the railroad companies have prepared this Formula and they have worked up certain statistical information for a two months period in 1913. This statistical information does not bear upon the cost of intrastate transportation as compared with interstate as indicated in the above quotation should be done, but it was a mere gathering together of the costs on the trains and in the stations in great detail and then dividing those costs so gathered in multitudinous ways, according to this Formula.

The primary division of them is between line and terminal. Any errors in, or overloading of, the terminal expenses by mistaken methods of computation or fallacious bases, throw an undue burden upon the state traffic as it becomes chargeable ordinarily with two terminal expenses to one for the interstate, and much of the interstate (the transtate) having none. Therefore, erroneous allocation of expenses to the terminal side of the equation readily runs to extra cost against the intrastate traffic.

The railroad's Exhibit 40, page 2145, gives the relation of each class of traffic to the other. It is seen therefrom that the total ton miles of intrastate freight in Arkansas is composed of 3.65 per cent intrastate and 96.35 per cent interstate, and the total passenger miles for the same period 43.77 intrastate and 56.23 per cent interstate. If a given expense which is common to freight and passenger, such as the maintenance of the track, is a given amount, say a million dollars, and is divided between freight and passenger erroneously, assigning too much to passenger, the intrastate suffers to the extent of the erroneous assignment. To illustrate: if the engine ton mile erroneously assigns $100,000.00 more to passenger than to freight than the true amount, then as to that $100,000.00 thus erroneously assigned, the state passenger must bear 43.77 per cent of it, whereas only 3.65 per cent of it would be chargeable to the state if it were on the freight side of the equation.

Many other bases in the Formula, too numerous to mention, if erroneous, would unduly burden the intrastate.

The line and terminal divisions are not made by the statistical information gathered in the test months. The line and terminal allocations are made by this Committee of accountants and statisticians who prepared the Formula. The statistical information merely fits into the holes prepared by the statisticians for it to fall into after it is gathered.

It is purely a matter of opinion where the line of cleavage runs between line and terminal as defined in this Formula. Take the front page of it and look at the diagram therein. Branch lines are brought into main lines; foreign lines cross the main lines, some at the same point with the branch lines.

The testimony shows that the service performed, except in some negligible clerical matters in receiving or discharging freight or passengers at these points between foreign lines and branch lines is identical, yet one is classified as terminal, the other classified as line.

In railroad parlance a terminal is a division point where trains are made up and broken up, and in the testimony here you will find some confusion in the use of the word "terminal" as used in the Formula and as used in railroad parlance. At division points trains are made up and broken up, both freight and passenger. The through freight trains which carry the bulk of interstate traffic run from one division point to another, and in each one the cars composing it are made into other trains and go out under other captains.

This great item of expense in division yards is classified by the Sanhedrim as line.

As shown in the foregoing statistics the intrastate traffic in Arkansas has an average haul of one-third of the interstate; it is also in testimony that division points are approximately one hundred miles apart. Therefore, it is apparent that the freight having the longer haul will use these division points more than the freight for the shorter haul. This expense is divided on a net ton mile basis between state and interstate, thus making each mile of intrastate bear the same proportion of each mile of interstate traffic, when as a matter of fact quite little of the intrastate traffic has received this service in the division yards. When it is remembered that the average intrastate haul is 25 miles this becomes apparent.

One of the big items of expense divided between line and terminal is the repairs to locomotives, repairs to passenger cars and repairs to freight cars, and the renewals and depreciation of each class. The Formula states frankly that this is a matter of opinion which must be determined by experts. (Formula, page 13.)

The Formula contains a statement of certain percentages derived as an average from letters written by General Managers. This, however, was abandoned and in lieu thereof Mr. Symons was called as a witness to allocate these expenses betwen line and terminal from his expert knowledge thereof.

Mr. Symons showed great experience in mechanical work and impressed the trial court as being a witness whose expert opinion could be relied upon. If you will, however, read his cross-examination it will be seen that he utterly failed to comprehend either the subjects to which he is testifying, or else the division as worked out in his formula between line and terminal.

He states that 80 per cent of the injuries to freight cars is due to rough handling. (R. p. 486.)

He says the percentage of repairs to passenger cars due to rough handling is very small.

In regard to locomotives he has not carried separately a factor expressed in figures representing rough handling, but he had in mind the fact that local switching is harder on engines than through movement. (R. p. 487.)

He was asked how much of the injury to freight cars he attributed to track conditions and stated he had not made any subdivision of the injuries resulting from track condition, but says in a general way that almost all derailments are caused by track conditions in combination with speed, and the effect of the derailments is damage to the equipment.

He was asked how he classified such damage to equipment between line and terminal and stated he classified the rough treatment primarily to terminal. Then knowing that some of it occurs in the character of line service, making up and breaking up of trains, he subtracted an amount which in his judgment is fair and reasonable to proportion it to line expense. (R. p. 488.)

He was asked how he classified injuries due to various track conditions such as derailments, oscillation, low joints, and so on, betwen line and terminal in the contributing causes for car repairs and stated he had not classified derailments in line and terminal. He had not considered track at all as a separate item. He had considered primarily as the basis rough treatment and set up against that normal wear. He states he was not including bad track as a part of rough treatment and refers to that primarily as improper handling of cars, especially in terminals and to a certain extent on the line. (R. p. 489.)

He then describes switching in hump yards and ordinary yards, the effect upon the cars, and states that when the bill

would come for such repairs as were occasioned by such handling as the cars had received that he would distribute it 80 per cent terminal and 20 per cent line, based on his observation and experience. (R. pp. 490-491.)

He states that his plan of distribution of engine repairs is identical or very close to the distribution made by Wellngton n his work entitled "The Economical Theory of the Location of Railroads." While his percentages are different, as he states, due to modern equipment, his analysis of the component parts are practically the same. He claims to have originated his analysis before he saw Wellington's book, but they are practically the same. (R. pp. 493-494.)

The first contributing cause considered by Wellington is time and exposure.

Mr. Symons was asked how he provided for that in his distribution of cost and says he took care of it in a general way in the life of a car or the life of an engine. He assumes that it is a factor now as it was in Wellington's time; but he has not considered it in terms of percentages, but has always considered it.

This factor is practically depreciation, and Mr. Symons was pressed to tell how he had treated depreciation between line and terminal. Wellington had ascribed six per cent to this factor, but Symons was unable to give any per cent for it, and unable to show in any place that he had divided this well known factor between line and terminal.

To thoroughly understand Symons it will be well to turn to the evidence relating to the Wellington and Berry tables.

Mr. Simson (R. 606) put into evidence Exhibit "F," a distribution of expenses of repair of locomotives, passenger cars, freight cars and work cars between line and terminal, based on the Berry table. He obtained the Berry table and the article supporting it from the proceedings of the 5th Annual Convention of the American Railway Engineers and Maintenance of Way Association held in Chicago March 15th to 17th, 1904. He took this table as near as the information therein given will permit, and it is fairly close, and assigned to line and terminal the percentage of each contributing cause following the definition of line and terminal in the Formula.

He sets forth the Berry table and then follows it with his distribution. The time and exposure which is referred to (which is depreciation) he treated as overhead. He found that the Wellington table was very close to the Berry table.

There is little difference in the distribution of locomotive repairs and passenger car repairs between Symons and Berry and Wellington, but there is a radical difference between freight car repairs assigned to line and terminal.

Symons table (Exhibit 43, page 2155) assigns freight car repairs 35 per cent to line, and the Berry table 62 per cent (speaking in round numbers). This makes a difference of 24.50 per cent, or expressed in dollars for the two months test period is $15,386.47. If those two months be taken as representative of the year it would make $92,382.82 excess charge freight car repairs to terminal through the use of the Symons table instead of the Berry table.

Mr. Simson was cross-examined at great length and with some severity by counsel for the Railroad Company as to his adaptation of the Berry table to the Formula. (R. pp. 753-757.)

He stated that he had no engineering or mechanical knowledge qualifying him to make these tables; that he did not make them, but merely as an accountant distributed the Berry table to the Formula according to the definition of line and terminals as given in the Formula and there was some overlapping in the elements.

Mr. Berry's article is quoted from at some length, page 754 to 757.

Mr. Nay testified that he knew Mr. Berry very well; that he had been the Chief Engineer of his railroad, but he says that he has not had experience in Maintenance of Equipment like he had had in construction work and in Maintenance of Way work. He says he is a high toned, straightforward man and that it is not likely that he would get up a table to read before an association of technical men without thoroughly preparing himself on the subject. (R. p. 361.)

(The objection to Mr. Berry's being a civil engineer, not a mechanical one, loses its force when the whole point of his paper was how to construct a road so as to cause the least damage possible to equipment; and his study was of construction and improvement of roads so as to minimize the injury to equipment and as a necessary part of that study gathered data as to the contributing causes of injuries to equipment so that in the construction and re-construction of railroads this would be a known factor and avoided as far as possible.)

The Wellington book is much quoted from and referred to by Mr. Symons and other witnesses. It is an old text book upon the subject written thirty or more years ago. The percentages therein would naturally be different under modern equipment as compared with the equipment at the time the book was written.

Mr. Symons states that it is a standard work and states that his analysis is practically the same as that of Wellington's.

Mr. Berry's article uses the Wellington table as a basis and he applied to these bases the percentages which he derived from several years of experimental work on Union Pacific Railway to find the contributing causes of injuries to equipment.

The table is found on Sheet 1 of Exhibit F, page 2230. It is a table giving in percentages the distribution of contributing causes of repairs of all classes of equipment. Take the freight car repairs as an example. Freight and work car repairs are 43.25 per cent of all the repairs to equipment. Distributing the contributing causes gives this result for freight and work car equipment: time and exposure, 6 per cent; stopping and starting, 20 per cent; switching, 16 per cent; curvature, 2 per cent; grades, 20 per cent; distance, 36 per cent. Mr. Simson merely assigns these elements into line and terminal.

He treats the time and exposure as overhead and distributes it 3.72 per cent to line and 2.28 per cent to terminal on basis of the located charges. Stopping and starting he assigns entirely to terminal; switching entirely to terminal; curvature, grades and distance entirely to line, the result being 61.72 per cent line and 38.28 per cent terminal, as against Symons 35 per cent line and 65 per cent terminal. (Exhibit 43, page 2155.)

Mr. Symons was asked how he distributed the item of starting and stopping between line and terminal; he stated in the time studies which he used as supplementary to and in support of his analysis he found the percentages originally used did not take into account the allowance for starting and stopping trains at stations, and he assigned to locomotives and freight trains for the purpose of reaching a fair division between line and terminal 12 minutes for the starting and stopping at stations and used that 12 minutes to show the amount of terminal work a locomotive does and compares that with the actual time the engine was on the road less the time when it was waiting for trains and the delays when it would not be doing any work, but he says this time element does not enter into car repairs. (R. p. 498.)

He says he divides the elements of starting and stopping between line and terminal and was asked to give the total amount ascribed to this cause, but stated that he did not know how to determine that with such precision as to express it in dollars and cents, but that he has considered it as a distinct element of injury, but not expressed separately. By confining himself to line and terminal he defined the scope of work he had in charge. (R. p. 500.)

He had used certain sum representing engine repairs and

divided it minutely in dollars and cents, but declined to divide this item of starting and stopping into dollars and cents without knowing what it amounted to in its physical effect. (R. p. 501.)

He recognized it as a considerable item of injury to locomotives but not expressed in his tables other than reflected in the respective proportions assigned to each according to his judgment. (R. p. 501.)

The various elements outlined in the Berry table, and the Wellington table which he recognized as authority, are put before him and he is asked how much he ascribed to each and he is unable to answer as to any of them; merely falls back on his experience and judgment and relies on his experience and judgment in giving percentages to line and terminal.

It is impossible to abstract the cross-examination of this witness to do justice to him, or to the subject, and you are asked to read it with the confident conviction that when you have you will conclude that this was "leaving a matter of much intricacy to general expressions of judgment."

A class of expert opinion to which your attention is particularly directed is that of Mr. Frank Nay, one of the authors of this Formula. In order to see particularly the force of his expert opinion a little ancient history might be applicable and this history is developed in Mr. Nay's cross-examination. In the Iron Mountain and Southwestern Railway Rate Cases, Mr. Nay first appeared as the principal witness for the railroad in support of the revenue theory for dividing expenses and property. The State in that case to demonstrate that railroad expenses could be allocated instead of being distributed in accordance with the judgment of railroad officials, set up a Formula for certain parts of these expenses. It took the railroad company's assignment of revenue and expenses to the state and its assignment of freight and passenger and began the problem there. It divided expenses, broadly speaking, into three classes: yard expense, station expense, and train expense.

On the passenger side it separated mail and express from the passenger traffic on a space basis and used passenger miles to distribute train expenses between state and interstate. It used the respective number of passengers at stations to distribute station expenses between state and interstate.

On the freight side it divided the trains between local and through and divided train costs of each on the ton miles respectively of state and interstate on each class of train..

The station expenses were divided on the respective tons

handled there, state and interstate, and the yard expenses on the cars in and out of the yards in state or interstate traffic, respectively.

Mr. Hamilton states that this Formula of the State in the Iron Mountain case might for comparative purposes be considered the background of this Formula. (R. p. 74.)

It will be remembered that Mr. Hamilton was then one of the assistants to the accountant who prepared this Formula in the Arkansas case.

Mr. Nay admitted that the State in the Iron Mountain case had the idea of applying the use basis in its Formula; that he now frankly admits it on the stand although he was an advocate of the revenue basis at the time. (R. p. 320.)

Mr. Nay further stated that they were now aiming at the same thing the State aimed at in the Iron Mountain case, but he thinks they are getting it more accurately. (R. pp. 262-263.)

In the Iron Mountain case after this Formula was introduced, Mr. Nay was put upon the stand again and criticized almost, if not every basis used therein.

In that case one month was used to represent a six months period. Mr. Nay vigorously criticized this as unsound. (R. p. 371.) And in this case they take a two months test for one year and also as a basis to relate back to a period six years prior thereto; and yet he gives his opinion that it is sound in this case. (R. pp. 370-380.)

Another criticism of the State's Formula in the Iron Mountain case was that the expenses were grouped in subdivisions, divided on various bases many of which had little or no relation to the expenses as he then thought, but now uses these same factors in some instances in the same way. The method was complicated and was capable of being adjusted or manipulated. He admits that the Formula in this case, as that one, was capable of being manipulated so as to bring about different results by changing the basis for one or the other of these different factors by anyone who wants to produce a certain result. (R. pp. 385-386.)

He criticized the State's Formula in that case for separating expenses of freight and passenger on a train mile basis and dividing the expenses between local and through trains on a car mile basis on the ground that either the train mile basis should have been used in both cases or the car mile basis should have been used in both cases.

He states that he has changed his opinion on that subject now and that passenger and freight, and local and through, should be divided on different bases. (R. pp. 390-391.)

He says now that the passenger and freight should be

divided on the engine ton mile and the local and through on the gross ton mile. He states that in the former case that he said the revenue basis was the best basis for dividing these expenses. The State's accountants thought a car mile basis was the best.

Mr. Hamilton and Mr. Ludlam put in the car mile basis, and they were as honest in supporting it as he was, he admits, and now he comes with another basis and is no more honest now than he was then, but in his judgment this is the best approximation to date. (R. pp. 390-394.)

He criticized the use of train mileage to divide injuries to person, damage to property, etc, injured by trains on the right of way because such casualties do not occur with regularity or with reference to the train mileage. In this Formula those expenses are divided on the gross ton mile basis.

Mr. Nay was questioned as to whether the same objection would not apply to this basis as he had applied to the train mileage basis before; that is, that the casualties do not occur with regularity, but he stated that he thought the basis used in this Formula was correct. (R. pp. 394-400.)

In the Formula of the State in the Iron Mountain case on the freight side the expenses were divided between local and through trains and not so divided on the passenger side, but apportioned on a space basis, and Mr. Nay stated that it seemed to him to be consistent that the same division should have been adopted between the local and through passenger trains as well as between the local and through freight trains; that local and through passenger trains were just as distinctive as through and local freight trains. He says he has changed his opinion on that subject of division now. (R. p. 402.)

He objected to the division of Maintenance of Way expenses between local and through on a car mile basis because car miles do not take into consideration that 90 per cent of the expenses of Maintenance of Way was due to the weather and natural causes and yet he now advocates an engine ton mile basis for dividing Maintenance of Way expenses between freight and passenger. (R. pp. 404-410.)

The Formula provides for dividing expenses in the minutest detail according to Mr. Nay, but this minute detail seems to be the adoption of various bases which at best are approximations as he admits, but Mr. Nay says that these bases are used only in dividing expenses which cannot be definitely assigned to any one class of traffic. Where there is common expense used in connection with two kinds of traffic there must be an apportionment, there could not be an assignment. He says that these common expenses are

less than one-half of the total expenses, but does not indicate how much less. (R. pp. 431-432.)

This review of Mr. Nay's attitude in the two cases is useful to show the value of his opinion, and his opinion is the cornerstone of this case. He was just as honest and just as able and just as forcible in supporting the revenue basis in the other case as he is in supporting this Formula now. He was just as vigorous in his attacks upon the Formula prepared by the State in that case, which used in a limited way factors that are used in this Formula, as he is in supporting these factors in the present Formula. That Formula was anathema to him; this one is holy. A will-o-the wisp is a safer leader than this variable expert on Rate Cases.

Without following into minute detail the various bases attention is called to these which are supported only by opinion testimony:

a. The division of component parts of the road between line and terminal as diagramed on page 2 of the Formula.

b. The division of tracks between line and terminal as defined on page 4 of the Formula which is followed throughout the Formula in all of its ramifications and the expenses apportioned according to this classification made by the Committee.

c. Division of all the expenses and property between line and terminal, which from its nature is an arbitrary division and in many instances inapplicable to the facts.

d. The expert apportionment of locomotive, passenger car, freight car and work car repairs, renewals and depreciation between line and terminal.

e. Division of telegraph and telephone expense account 14 arbitrarily between line and terminal on basis of 50 per cent each.

f. Division of Buildings, Fixtures and Grounds, account 16, on the numerous bases therein between line and terminal and later between freight and passenger.

g. Division of line expense between freight and passenger on engine ton mile basis.

h. Apportionment of passenger expense between coach and pullman, mail and express on car foot mile basis.

i. Apportionment of line freight expenses between local and through trains on the gross ton mile basis and the apportionment of this expense on the net ton mile basis between state and interstate.

j. The assignment of traffic expenses on the terminal side and dividing the common traffic expenses on the line units.

k. Adjustment of non-revenue expenses and the apportionment of overhead expenses on the basis of direct charges.

l. The apportionment of the value of property to freight and passenger, line and terminal, state and interstate, on the basis of Transportation charges.

m. The apportionment of locomotive values on one basis and car values on another.

These various bases may or may not be right according to the opinion of the person called upon to make the apportionment.

Instead of gathering the statistical information indicated in the Arkansas case should be gathered to determine the relative expense of state and interstate, the railroad has gathered two months statistics of expenses and apportioned them on a Formula depending in every material factor on the weight to be attached to the opinion of those who prepared the Formula to apportion these expenses.

The Formula does not contain the information called for by the decision. It prescribes numerous methods by which these expenses may be distributed or apportioned or guessed off, and these methods are merely supported by the opinions of the bright and capable railroad accountants who are experts in Rate Cases.

THE FORMULA IS MATHEMATICALLY DEMONSTRATED TO BE WRONG.

The railroad's Exhibit 4, page 2 (R. p. 1962), states: "Proceeding on the assumption, as indicated by the principle laid down in the Formula filed as Exhibit 1, that it costs the same per ton for a given terminal or station handling of a ton of intrastate freight that it does for such handling of interstate freight and further, that it costs the same for the haulage of a ton mile in intrastate freight that it does for a ton mile of interstate freight." * * * *

"This process assumes that the average terminal cost, per ton handled, in Arkansas, is closely reflective of the average cost per ton for similar service in the other states in which the St. Louis & San Francisco Railroad operates, and it further assumes that the average haulage cost per ton mile in Arkansas is closely reflective of the average haulage cost per ton mile in the other states in which the St. Louis & San Francisco Railroad operates." On page 3 it is stated: "It is not considered that these assumptions are violent, for the reason that operating and traffic density conditions in Arkansas are thoroughly typical of such conditions upon the railroad as a whole." The same assumptions are made in regard to the passenger traffic. (p. 4.)

The statements in this exhibit were read to Mr. Nay and he was asked, assuming those statements to be correct, if the multiplication of the cost of two terminals by the total number of tons of revenue freight handled would give the total terminal cost for the entire line, and said that would be true providing the cost per ton for the entire line is exactly the same as the terminal cost per ton in Arkansas.

He was asked in regard to the line cost if a multiplacation of the haulage cost by the total tons moved one mile of the revenue freight would give a total haulage cost of revenue freight for the entire line, and stated provided the haulage cost for the entire line is exactly the same as in Arkansas it would.

The same questions were put to him in regard to the terminal cost of the passenger and the line cost on the passenger side excluding the non-revenue passenger. Mr. Nay says the same principle would apply as to freight providing the conditions are the same. (R. pp. 419-424.)

Mr. Hamilton states that if a proper allocation of terminal expense and of line expense on the Frisco Road as a whole were made then if you will follow the process used by Mr. Simson in the exhibit to which attention will be called, the results should be the actual operating expenses of the Frisco Road. If the total expenses of the Frisco Road were analyzed as they were in Arkansas and divided between line and terminal and then the traffic units applied to them, as a matter of mathematical accuracy it would produce the total expenses of the railroad. (R. p. 863.)

The first Exhibit filed by the State was Exhibit "A," which was a statement of the unit cost, line and terminal, freight and passenger, for the months of November and December, 1913. (R. p. 2216.)

This Exhibit corrects the method of computing the terminal costs used by the railroad. The railroad had made the mistake of computing it at the rate of expense per ton instead of expense per ton per terminal. (R. pp. 592-594.)

The concrete result of it was this: The railroad had terminal expense on freight of 36.486 cents and it should have been 31.139 cents. The railroad had a mileage equivalent therefor of 78 miles, where it should have been 67 miles.

On the passenger side the terminal expense should have been 5.433 cents instead of 8.677 cents and a difference in mileage equivalent of four and one-half miles instead of seven. These figures were used by the company to ascertain the interstate revenue to assign to Arkansas adding the equivalent mileage to the actual mileage in order to compensate for the terminal expenses without the State.

Mr. Hamilton admits that the company's unit costs were wrong and that Mr. Simson's figures as shown in Exhibit "A" were correct. (R. p. 826.)

Therefore, it is unnecessary to follow the calculation and is also unnecessary to consider Exhibits "B" and "D". These Exhibits were made by Mr. Simson on Mr. Hamilton's unit costs and were filed and explained before Mr. Hamilton discovered and admitted the error of his unit costs. They were merely presenting the same problem which is presented in Exhibits "C" and "E" on the assumption that Mr. Hamilton's figures were right, but as Mr. Simson's are acknowledged to be correct, Exhibits "B" and "D" have no further office in the case. (R. p. 826 and 862.)

However in his explanation as first given on "B" and "D," the principle may be found stated more clearly than in "C" and "E." "C" and "E" merely substitute Mr. Simson's unit costs for Mr. Hamilton's.

These Exhibits have constructed the operating expenses on the line north of Red River using the number of tons of revenue freight moving and applying the terminal cost per ton for each terminal and applying the haulage cost per ton per mile and applying on the passenger side the terminal cost for each passenger multiplied by two to account for the terminals for each passenger, the same as the freight.

Haulage cost was multiplied by the number of revenue passengers carried one mile. (R. p. 598-599.)

Therefore, it is apparent from the statement of Mr. Nay and Mr. Hamilton that if these terminal and line costs were correct and if the statement of Exhibit 4 is correct that the line and terminal cost in Arkansas was closely reflective of the line and terminal cost throughout the system, then this process should bring the actual operating expense of the Frisco Railroad.

Exhibit "C," page 2224, is a statement of the cost of handling freight and passenger traffic and mail and express on the entire line of the Frisco Road north of Red River for the test period of two months ended December 31st, 1913, and the seven fiscal years ended June 30th, 1914, computed by the corrected basis of unit costs as shown by the State's Exhibit "A."

For the two months period computed by the line and terminal units the expenses for that period were $5,498,901.06; the actual operating expenses for that period as shown by the company's records $5,215,791.43. This shows an excess of total expense as computed on the cost units over the actual operating expenses of $769,109.63. Applying the same process to the years is found an excess of expense as constructed

on the units over the actual expenses, for the year 1914, $3,257,472.34; for the year 1913, $5,751,142.86; for the year 1912, $3,475,477.05; for the year 1911, $3,123,949.71; for the year 1910, $4,298,713.15; for the year 1909, $5,265,916.75; for the year 1908, $3,416,744.84.

This Exhibit contains a note that there is not included in the operating expense per the company's records, any expense in Texas, but there is included in the expense computed on the terminal unit and haulage costs the terminal expense for such numbers of tons and such numbers of passengers as cross the Red River. This grew out of the fact that the line of the Frisco Road which is in this suit terminated in the middle of Red River, the traffic being carried therefrom by another line owned by a Frisco corporation in Texas which reported separately.

Therefore, there was an error in these figures to the extent of the traffic crossing Red River. When the figures were compiled both Mr. Simson and Mr. Hamilton tried to get the amount of this traffic and neither was able to obtain it then and the Exhibit was prepared with a note to the effect of this error therein. (R. pp. 599-600.) Subsequently further data was discovered which developed the maximum amount of that error and that maximum is deducted.

By taking the accounts made of the Texas Frisco lines to the Interstate Commerce Commission and to the Railroad Commission of Texas, Mr. Simson was able by a process of exclusion to account for all of the traffic, freight and passenger, which moved in Texas intrastate and assumed that all which was not accounted for crossed Red River, which would be an erroneous assumption, but that assumption is against the State here and is the maximum extent of the error in these figures, and, therefore, will be deducted from them. On this Exhibit "C" it reduces the constructive expenses for the year 1913 from $5,751,142.86 to $5,368,896.45. That calculation was not carried back into the other years, but it was merely made to show that the error in this process was not material and since the maximum amount which could possibly have crossed Red River is accounted for the only error now in those figures is against the State.

It may be taken as established that the actual excess of expenses constructed on the unit costs as found by the company for line and terminal service in Arkansas, applied to the whole line is $5,368,896.45 above the actual operating expenses for the year 1913. (R. pp. 788-790.)

Knowing that this error existed in regard to the Frisco line north of Red River which is the road before the Court in order to test out the proposition more broadly Mr. Simson

made two more exhibits, one using Mr. Hamilton's unit cost and the other using his own as shown in Exhibit "A."

These are Exhibits "D" and "E." They take the entire line of the Frisco Road including the North Texas line, for the test period of two months ended December 31st, 1913, and for seven years preceding.

Exhibit "E," page 2228, built upon the same plan shows an excess of expenses for the test months as constructed on the cost units of $822,559.04, and for the year 1913 of $5,747,-409.87.

In Exhibits "D" and "E" there was an error growing out of the inclusion of two small lines in Texas that should not have been included for the year 1909. The error was comparatively small and the correct amount was written in red ink. It reduced excess cost from $5,747,025.66 to $5,343,102.41. (R. p. 775-786.)

Applying the reduction to eliminate the error in this Exhibit as in the previous one it would leave an excess cost of $4,982,917.05. (R. p. 789.)

Mr. Hamilton in his rebuttal testimony spends many pages in attempting to answer the unanswerable result brought about by these Exhibits to his unit costs of line and terminal expense. (R. pp. 826-834.)

His argument is that the density of traffic in Arkansas and the short haul in Arkansas makes the line and terminal expense greater in Arkansas than it is upon the entire line.

The proposition is put to him on cross-examination that one or the other of these alternatives is necessarily true; that either the Arkansas terminal expenses are higher than those of the line or else there has not been proper apportionment of line and terminal under the Formula. (R. p. 863.)

This is undoubtedly correct, and Mr. Hamilton's contention is that the terminal expense in Arkansas is higher than the terminal expense of the entire system.

Mr. Hamilton had testified on this proposition earlier in the case. He was questioned as to equating back from 1913 to 1907 and asked if he equated back so as to cover what he considered as terminal cost, and answered that he had by adding an allowance of mileage to cover terminal cost.

"The one way interstate revenue can be prorated between states is on a mileage basis. Surely, there is no ground for the assumption that a road earns any more on any one given mile of road haul than on another given mile of road haul.

Q. Does not the density of traffic affect that?

A. No, sir. That would affect operating expenses.

Q. Doesn't it affect earnings?

A. In a way, yes.

Q. In a very material way, wouldn't it?

A. No, sir. It would if we followed Mr. Douglass' method —not the one we have used in our 1913 figures." (R. p. 159.)

Mr. Hamilton explained the purpose of equating the interstate revenue so that there would be compensation for the terminal expense outside of the state, after referring to the difficulties in this point in other Rate Cases, he said:

"We tried to overcome that here as best we could, by allowing to the state that had this big terminal, so far as we could determine it, a proper revenue allowance to compensate for that terminal cost. So we determined the average cost per ton for the terminal expense in Arkansas—and by that I mean the terminal expense as it is defined in this Formula and these Exhibits—not the ordinary acceptance of the term. We found that was approximately 38 cents per ton. We also found the approximates of cost of hauling a ton of freight over the rails in Arkansas. We found that was about 4.50 mills, in round figures, or about that." (R. pp. 259-260.)

Then he explains the method of adding an equivalent mileage to compensate for the terminal cost outside of the State. Then he stated: "I have made a little research since the last hearing. We thought there was some inequality in this outside cost, and it was assuming too much when compared relatively with the big terminals. I was pleased to find that at St. Louis our two big stations, the Broadway station and our own station at Seventh and Cerre Streets, our cost per ton for handling freight has run between 36 cents and 39 cents for years; and that is pretty close to this Arkansas average. That strengthened my opinion that this is a fair equation, this comparison of terminal cost in the State as a whole with such terminal cost outside. I took that up just to satisfy myself how relatively correct that was." (R. pp. 260-261.)

In his argument in rebuttal testimony that the terminal cost is higher in Arkansas than on the line Mr. Hamilton stressed the fact that there was a less density of traffic in Arkansas than on the line as a whole, partciularly in some portions of the line. The actual figures on density of traffic were put in evidence.

In 1913 the density of passenger traffic in Arkansas was about 30 per cent less than the line, and on the freight side 19 or 20 per cent less. (R. p. 884.)

In 1907 the freight traffic was approximately 10 per cent less in density than on the entire line, and passenger traffic approximately 19 per cent less in density than the passenger traffic on the entire line. (R. p. 896.)

Mr. Simson states that when the same number of freight trains are run that the expenses of the road are substantially, if not exactly, the same whether they are loaded 75 per cent or 100 per cent of their capacity; that their revenues would be affected but their expenses not materially so, and on the passenger side of the question that, as Mr. Frates had explained, passenger trains carry a surplus power at all times over their capacity, and that an addition of 10 or 20 per cent in density of passenger traffic would have no appreciable effect on the expenses. (R. p. 897.)

It was also argued by Mr. Hamilton that these cost units were not used to divide expenses and that they did not affect the intrastate revenue or expense. They only affect so far as the railroad exhibits in this case go the interstate revenue apportioned to Arkansas.

This is true, but that does not go to the proposition involved here. This road has said that the cost in Arkansas both for line and terminal is closely reflective of the cost throughout its entire line; that the terminal cost for state and interstate freight and passengers is the same per ton and per passenger and the cost for hauling freight and passengers for state and interstate traffic is the same per mile hauled. That is the basic assumption of the Formula as explained by Mr. Nay. (R. p. 385.)

Mr. Hamilton, too, justified the statements of these exhibits in his own testimony to the effect that cost for terminals in Arkansas developed in this Formula of 38 cents was closely reflective of the cost of the entire line, giving the Court the benefit of his research in the company's large terminal in St. Louis. There he found the terminal cost running for years between 36 cents and 39 cents per ton. He then supposed the terminal cost in Arkansas was 38 cents and called attention to how closely the St. Louis terminal cost was with the Arkansas terminal cost. Later it developed through Mr. Simson's statistics that a mistake was made and that the terminal cost in Arkansas as properly worked out from company's Exhibits was 31 cents instead of 38 cents, or more properly speaking, it was an error in the method adopted in taking tons instead of tons per terminal. Upon the theory that the terminal cost in Arkansas was closely reflective of the cost throughout the line an equivalent mileage representing that cost in other states is built up and added to the actual mileage of all interstate traffic on the theory that this terminal cost in Arkansas represented the terminal cost elsewhere.

The Formula purports to divide all expenses between line and terminal and to do it accurately and minutely.

The evidence here shows that the density in traffic in Arkansas is comparable with the entire line to a degree where the difference would not affect the expenses. It is greater in Arkansas than in Oklahoma as is shown in the testimony.

The State accepted as true Mr. Hamilton's statement that the terminal cost in Arkansas was no higher than the terminal cost on the system. It accepted as true the statement in Exhibit 4 that the terminal cost in Arkansas closely reflected the terminal cost throughout the entire system. It accepted as true the statement in Exhibit 4 that the line cost in Arkansas was closely reflective of the line cost throughout the system and upon the road's own statement built up these Exhibits to ascertain if the road had correctly set up its line and terminal cost in Arkansas.

The result shows that after all corrections are made for the year 1913 on the lines north of the Red River there was an excess of cost of $5,368,896.40, and that the same year taking the entire Frisco Road including the Texas line there was an excess of cost of $4,982,917.05. In other words, if Exhibit 4 is true (and it lies not in the mouth of the Railroad Company to say it is not true), then the Formula has produced a terminal expense above the real facts and this excessive terminal expense has produced approximately $5,000,000.00 more expense each year than was actually incurred by the Company.

Both Mr. Nay and Mr. Hamilton say that if these costs were the same in Arkansas as they are throughout the system that the results built up by using them will necessarily be the actual operating expenses of the Company.

The Company has asserted the fact and proved it by Mr. Hamilton that the terminal cost in Arkansas is the same as over the system. It has asserted and proved it by Mr. Hamilton and Mr. Nay that the haulage cost is the same on any mile of the system as it is in Arkansas, and, therefore, but one conclusion can be reached and that is that it is mathematically demonstrated that the Formula has erroneously built up terminal costs that do not exist and they are built up to such an extent that they show approximately a $5,000,000.00 excess for each year above the actual operating expenses.

To put it in another way, if the Formula had brought about true results the use of these cost units for line and terminal expenses necessarily bring the actual operating expense of the road. Their use, however, brings about an excess of $5,000,000.00 a year.

It is not strange that such a formula would likewise produce 15.43 per cent excess cost of intrastate passenger over

interstate passenger and 319.58 per cent extra cost of intrastate freight over interstate freight. (Exhibit 17, p. 2022).

The result of the Formula is to build up terminal costs. Unquestionably excessive terminal costs have been built up and owing to the intrastate being chargeable with two terminals as against one for the interstate, and in many instances none (transtate), the result is seen both in the grotesque extra cost figures of the intrastate and in the absurdly excessive expenses constructed by the use of these units over the actual expenses of $5,000,000.00 a year.

The acid test has been applied to the statements in Exhibit 4 and Mr. Hamilton's testimony supporting them that the Arkansas terminal and line costs worked out under the Formula closely reflected the costs of the entire line. Only on the truth of that statement could the interstate revenue have been fairly prorated by having this mileage equivalent built upon these cost units. Its truth being assumed then there units costs are used to find the actual operating expenses of the road for the given periods. It is a mathematical certainty that they will produce it unless the line or terminal units are wrong. The result shows them wrong to such an extent that the Formula is necessarily destroyed.

EQUATING BACK TO 1907.

The primary question here is whether the preliminary injunction should have been granted in 1908.

The issue is whether the property devoted to intrastate traffic was earning a compensatory return from the intrastate rates when the preliminary injunction was granted.

The value of the property, and necessarily the earnings and expenses, must "be determined as of the time when the inquiry is made regarding the rates." (Willcox vs. Consolidated Gas Company, 212 U. S., 52.)

Whether the Railroad Company, the stockholder plaintiff and the injunction bond shall be held responsible for overcharges above the enjoined rates depends upon this fact.

It is true that should the Court find that the injunction was improperly issued at the time, but that later a changed condition of affairs showed confiscation where there had theretofore been compensation the plaintiff would be entitled to an injunction against the rates from such time as the change occurred, but that principle is academic here because the actual return for the year 1913 as shown both by the Railroad Company's Exhibit No. 61 and the State's Exhibits "AA" and "BB" is larger than for 1907.

This is true even if the diminution tables are applied and

the revenue reduced to a level of the State rates applied to the traffic of 1913. (R. p. 753.)

The return on the corrected figures averaging this period and deducting the supposed diminution in revenue from the application of the State rates during the year 1913 is 6.9 per cent or 7.23 per cent according to whether the old or new Formula is used in the assignment of earnings and expenses to the State.

Recognizing that it must show a confiscatory return in 1907 to entitle it to relief the Railroad Company's case is predicated on successfully carrying back to 1907 the extra cost percentages developed in applying the Formula to the expenses gathered during the two months of November and December, 1913.

The facts in regard to this equating process are set forth fully in Exhibit 23 and explained by Mr. Hamilton in his testimony which has been heretofore abstracted, and your attention is now specifically directed to this process.

The normality exhibits, 34 to 41, are supposed to furnish the justification for it by establishing substantially similar conditions in 1907 as existed in November and December, 1913. The State's Exhibits bringing the 1907 period to a normal average demonstrated that said period was not typical and that demonstration alone is sufficient to destroy the value of the equation, but the State's defense is not ended with that answer to the equating process, complete as it may be.

(a). In the first place the engine ton mile was used in the 1913 test months to divide common expenses of Maintenance of Way and Structures between freight and passenger.

The fallacy of this factor for this purpose is discussed at length in the following chapter. The use of this grossly unfair factor to the passenger traffic and through it on account of the much higher passenger percentage of intrastate than freight intrastate is itself sufficient to destroy the value of the equation.

This is a very similar situation to that developed in the Iron Mountain case, 230 U. S., 553.

Judge Trieber refused to use the revenue basis to divide property and expenses as a whole, but worked out a plan of his own taking as a basis the State's plan of separating expenses and changing the bases therein where in his judgment the factors used were wrong for the purposes used.

For several large items he substituted the revenue theory for the factor used in the State's plan. The result brought out a confiscatory return through the application of this plan used by the Court.

This Court, while rather complimenting the plan as a whole, yet on account of the revenue theory having been applied to some of the large items, refused to accept the result thus worked out on account of the inherent error of using the revenue theory.

If this Formula has any merit as a whole that merit is destroyed, like Judge Trieber's Formula was destroyed, by the use of a grossly erroneous basis for one of the largest items to be apportioned.

Mr. Hamilton attempts to defend the engine ton mile which he admits is brought back through the equating process to the four months ended December 31st, 1907, by showing that it differed but litle from the revenue train mile used by the Railroad to divide these expenses between freight and passenger for comparative purposes in watching its own operations. He shows that the engine ton mile assigned to freight 53.7 per cent of these expenses and the revenue train mile assigned 52.7 to freight for the fiscal year 1913. (R. pp. 854-855.)

It will be remembered that the Douglass Formula was the Formula for reporting to State Commissions the earnings and expenses of the given State, and did not deal with the separation of freight and passenger, but the Railroad had a Formula for that purpose which it had used for its own operating comparisons, which did use the revenue train mile to separate these expenses. (Exhibit 23, R. p. 2050.)

Mr. Hamilton in seeming justification of the engine ton mile referred to the fact that Mr. Simson approved the Douglass Formula and impliedly indicates Mr. Simson thereby approved the revenue train mile division between freight and passenger. This is, unintentionally, misleading. Mr. Simson only used the Douglass Formula for assigning revenue and expenses to the States. None of his exhibits went into the division between freight and passenger, state or interstate. He made this clear both in his direct and in his cross-examination, and all remarks of his commendatory or otherwise of the Douglass Formula related solely to the Formula for assigning expenses and revenues to the State, and there is no commendatory reference by him to this other Formula used by the railroads for dividing between freight and passenger.

The revenue train mile division between freight and passenger is thoroughly discredited. Mr. Hamilton was reminded that in the Iron Mountain case Mr. Gray and Mr. Ward and probably other eminent railroad operating officials testified that the revenue train mile was the most unreliable factor which could be used. He said that he

thoroughly agreed with them that such was the case. (R. p. 878.)

The train mile basis was tentatively considered by the Committee framing this Formula—this Sanhedrim of the litigating railroads—and rejected by it. (Nay, pp. 410-411.)

It, with all other bases suggested by the railroads and by various state commissions, was thoroughly considered by the Interstate Commerce Commission in the Western Fares Advance Case, and discarded. (37 I. C. C., 1.)

Therefore, no support can be gained for the engine ton mile by assimilating it to the revenue train mile, and an equation built up by bringing together two formulas each using a bad basis for this purpose cannot bring about any result which will be convincing.

(b) Exhibit "G," record page 2234, was prepared and introduced by Mr. Simson, and thus explained: Under the equating method which contrasts the expenses and earnings of the year ended June 30th, 1913, under the old Formula to the distribution of the same earnings and expenses under the new Formula from which a percentage relation is obtained and which percentage relation is applied to the distribution of earnings and expenses under the old Formula basis for the four months ended December 31st, 1907, it became necessary to make an examination of the distribution or apportionment of expenses to Arkansas under the old Formula. The result of not apportioning to Arkansas under the old Formula any expenses for the year ended June 30th, 1913, which should have been apportioned would increase the percentage relationship of the new Formula from the old and thereby unduly increase that percentage relationship of the amounts assigned to Arkansas for the four months of 1907. (R. pp. 610-611.)

In pursuance of his investigation he found the method of handling the expense at the Memphis terminal was different in 1913 from what it was in 1907.

He goes into great detail in explaining the two methods and the result of his investigation, but as Mr. Hamilton admits that a mistake was made as pointed out in Exhibit "G" (R. pp. 825 and 839), it is not necessary to follow out this detail. The exhibit shows that through an error in the Transportation expenses assigned to Arkansas in the Company's Exhibit "27A" that there was an excess of $23,080.62 over the actual expenses.

Mr. Hamilton seeks to minimize the effect of this error by showing that after making the correction the intrastate traffic would still be in the red. (R. p. 840.)

When it is remembered that all calculations by the Rail-

road Company to show a return (or non-return) on intrastate business are based on the alleged extra cost percentage of 15.43 of intrastate passenger and 319.58 per cent to intrastate freight, it is readily seen that such results spell nothing and that it is practically impossible to make out any return on traffic thus burdened.

The original affidavits upon which this case was based made no such extravagant claims. Even with the support of the eminent railroad officials testifying to the extra cost of the intrastate over the interstate it was therein only claimed to be 25 per cent on passenger and 100 per cent on freight. (R. p. 58.)

This error of the $23,000.00, however, does not stop with a mere adjustment of it on the expense side. It is part of the Transportation expenses (R. p. 612); and under the Frisco modification of the Formula (Formula pp. 39a and 39a), the Transportation expenses, as assigned, are used as bases to apportion the common property between line and terminal, freight and passenger, mail and express, and state and interstate.

An error, however small, in the assignment of these expenses quickly runs into big figures in their application to the property values.

To illustrate: Assume sixteen millions of common property to be divisible between freight and passenger on the basis of the assignment of Transportation expenses. Assume such expenses for a given period to be $100,000.00. An error of $1,000.00 in apportionment between freight and passenger would make a difference of one per cent in the basis. Suppose the basis of division should be 50 per cent to each, but that the error results in assigning to passenger one per cent more than that, and that therefore $160,000.00 too much property is assigned to passenger service on account of $1,000.00 too much expense being erroneously carried to the passenger side. It would require $9,600.00 of the net income from passenger sources to make a return of six per cent on the $160,000.00 of property erroneously assigned to passenger service, and by reason of the application of the "equating" theory, this same error would have a substantially identical effect on all other periods which were "equated" on the one directly distributed. In addition, the error of $1,000.00 in assigning the expenses between classes of service would improperly reduce the net income from passenger service, so that an error of this kind cuts both ways in its effect on the results, i. e., it reduces the net income and at the same time increases the assigned property value on which the return is to be computed.

Mr. Simson discovered that the equating method had been applied to the to the total of Maintenance of Way and Structures, of Maintenance of Equipment, of Transportation, of Traffic and of General Expenses, and that had the equating been worked out by an application of the percentages to each of these individual accounts instead of the total the equated figures for the four months ended December 31st, 1907, would have been $7,397.80 less than the actual amount assigned to Arkansas. (R. pp. 612-613.)

He had not worked this out between freight and passenger. He was merely considering the amount assigned to Arkansas in the Company's Exhibits before any division was made to freight and passenger. (R. p. 613.)

Mr. Hamilton admits the correctness of this computation, but says that if you go further and make that calculation by the individual Interstate Commerce Commission classification which is suggested by Mr. Simson and adjust the Company's non-revenue burden from the freight to the passenger side, and then applied this percentage to each individual Interstate Commerce Commission account separately it would have resulted in assigning $8,400.38 more to Arkansas than was actually done, but he thought he had made a correct assignment in Exhibit "27 A." (R. p. 824.)

Mr. Hamilton was evidently in error as to the method of this computation. The Company material adjustment under the Formula did not result in any increase of the original assignment of expense to Arkansas, but simply in the re-arrangement of them between freight and passenger. Mr. Simson was dealing solely with the amount of expense assigned to Arkansas, and in his rebuttal testimony (R. pp. 888-889) he makes this clear. The Formula (page 37) and Exhibit 10 (page 1999) show this to be true.

The Court in his opinion, record page 914, refers to this matter and accepts Mr. Hamilton's statement of it, and stated: "No rebuttal was offered by Mr. Simson or any other witness as to that statement."

The Court overlooked the testimony of Mr. Simson which is referred to. In fact, it is a self-evident proposition that the assignment to Arkansas as a whole can not be affected by a redistribution of part of those costs between freight and passenger. The proposition was dealing entirely with the amount of expenses assigned to Arkansas and not their distribution.

(d) Mr. Simson discovered this further fact in locating the various expenses to the State. The old Formula prescribed many items to be distributed to states on an "actual" basis. The new Formula used "direct," or "located direct," the

terms being synonymous. In each instance the Formula called for an actual location instead of an apportionment of certain expenses which were susceptible of actual location to the State.

But in applying these two Formulas there was found quite a difference in numerous items which should have been identical, one of these being an item of station employees, account 63. Each Formula called for that to be located to the State direct. There is no reason why substantially every dollar of that account should not have been located, as each station is located either within the State, or without the State. The old Formula apportions $207,957.30 to Arkansas; the new one apportions $226,019.35. Other instances are given. (R. pp. 613-614.)

Mr. Hamilton admits the correctness of these figures, but says that he found a large part of these items were included in Mr. Simson's Exhibit "G," the inference being that Exhibit "G" represented the total errors in this matter. (R. p. 825.) But he was mistaken about that as pointed out by Mr. Simson who said that some of these errors were included in his Exhibit "G" covering the Memphis terminal proposition but others were not.

There was a difference between the item of injury to persons in round numbers $25,000.00, and difference in the item of damage to property of $1500.00, and some other minor differences which were not included in Exhibit "G." (R. p. 887-888.)

In other words, each Formula calls for an actual location to Arkansas of a given item of expense. The figures differ in sums of $25,000.00 and less as to what are the actual expenses assigned to Arkansas. This was not only error in fact but reflected error in equation.

Mr. Nay was asked if, under the Formula, should any property or expense be found to be entirely interstate or intrastate, should there not a direct assignment of such property or such expense be made to the class to which it belonged from its nature, and he said that it should be done.

Referring to the Memphis Bridge owned by the Frsico Road he said that was exclusively interstate property. From its nature there could be no intrastate business over it; that it should be assigned direct to interstate. (R. pp. 432-433.) Yet it is found on examination of the accounts that part of the expense growing out of the Memphis Bridge is assigned to Arkansas intrastate in spite of the fact that all of the revenue from the Bridge is being classed as interstate. (R. p. 889.) Another error in fact which finds reflection in the equation.

(e) The results of the normality Exhibits show such variations in many instances between the two months of 1913 and the four months of 1907 that it would be impossible to make any fair comparison between the two unless they were brought together on some equitable basis such as was attempted by the State in its averaging exhibits.

For instance, take Exhibit 41, which gives the proportion of the entire line operating expense and traffic compared. It is seen therefrom that for the four months of 1907, 11.80 per cent of the operating expense was assigned to Arkansas, while for the two months only 10.44 per cent was assigned. And the movement of freight was different, in the four months of 1907 the Arkansas proportion was 11.28 and in November and December, 1913, 9.48 per cent, while the relation of passenger for the same period was reversed. The smaller proportion being in 1907, 10.25 per cent as against 11.14 per cent in the two test months of 1913.

Exhibit 40 shows the ratio of intrastate and interstate traffic to the total in Arkansas. The intrastate freight traffic for the four months in 1907 was 3.65 per cent, while for November and December, 1913, it was 3.89 per cent. Again, the passenger proportion was relatively different, it being for the four months 43.77 per cent, while for the two months of 1913, 40.55 per cent. The density of freight traffic in the four months of 1907 was materially heavier than in the two months of 1913, being 1417 as against 1280, while the density of the passenger traffic was much heavier in November and December, 1913, being 271 as against 197 for 1907. (Exhibit 38, page 2141.)

In view of these differences in operating conditions, differences in traffic conditions, differences in earnings and in expenses it is respectfully submitted the two months period of 1913 cannot represent the four months period of 1907 so that the results of one can be taken for the results of the other.

For each of the reasons discussed in (a), (b), (c), (d) and (e) it is submitted that the equation used here is valueless.

ENGINE TON MILE BASIS FOR DIVIDING MAINTENANCE OF WAY BETWEEN FREIGHT AND PASSENGER.

Accounts 2 to 10 in Maintenance of Way and Structures, in the apportionment of line expenses between freight and passenger, are divided on the basis of the engine ton mile formula. (P. 17.)

Mr. Nay says: "These accounts are the principal Maintenance of Way and Structure accounts; it is where most of the money goes." (R. p. 308.)

Exhibit 40 shows that in 1907 the intrastate ratio was only 3.65 per cent of the total freight, the interstate being 96.35 per cent, while the intrastate passenger was 43.77 per cent and the interstate passenger 56.23 per cent.

As this basis for division goes to the accounts where most of the money of the railroad goes, it is apparent that where there is such a marked difference between the relative freight and passenger intrastate to that of the interstate, that an apportionment of too much to passenger will find reflection in too large an assignment of expenses to the intrastate traffic.

Hence if this basis is incorrect, being one of the material factors in the Formula, the margin of error will necessarily be great, if there is an error, owing to the wide differences between the relative freight and passenger intrastate business to the whole, then the whole Formula must fall.

This is the main line of the railroad between stations which is divided on this basis between the two classes of service. Heretofore the railroads, in Rate Cases, have divided it on revenue train mileage on the theory that the extra speed of the passenger trains compensated in the use of the track for the extra weight of the freight trains. Then it had been contended that only a minor part of this expense varying from 10 per cent to 25 per cent of the actual upkeep, is directly traceable to the wear and tear caused by the trains running over it; the remaining 75 per cent or 90 per cent being due to the action of the elements. (R. 109.)

Mr. Hamilton says, "There was only, so far as we could see, one common ground on which the freight and passenger service could meet, and that was the engine ton miles, and for this reason: the weight of your engine denotes not only its type, but the size and character of the train that you expect it to haul. It is conditioned to the service required of it." (R. p. 109.)

Continuing, he says that the train behind the passenger engine consists of fewer cars than the train behind the freight engine, but the passenger engine is required to run at a greater speed and the freight engine is rquired to pull a heavier train at a slower speed.

It seemed to the Committee that the service of the engine being conditioned to the speed and weight combined and expectd to be met with in the passenger and freight train respectively, really was the best common unit of measurement of the use that was gotten out of the track as between

freight and passenger service, because the track is used to pull trains of varying weights and varying speeds. The locomotive in the freight and passenger service being accommodated as to the speed and tonnage that each must handle. (R. p. 110.)

The engins ton mile runs 49 per cent of these expenses to passenger and 51 per cent to freight in 1907. As shown in Exhibit 9 and explained by Mr. Hamilton (R. p. 197) the revenue train mileage runs about 51 per cent passenger and 49 per cent freight. Mr. Hamilton does not advocate the revenue train mileage for this division, but merely gives these figures to show that the revenue train mileage is practically the same as the engine ton miles. (197.)

He was asked if engine ton mile did not ignore entirely the weight behind the engine, and stated that it did, except that the engine is conditioned by its size to pull that weight at the speed required of it.

He was asked if this factor did not ignore entirely the speed of the train and he said it did, except as the speed is reflected by the size of the engine as compared with the weight of the train which it has to pull. He says that the traffic is not evenly distributed on the Frsico; that it is unbalanced in spots. (R. p. 198.)

He says that the size of the engine indicates the speed and the weight of the train the engine is to pull, and that is not a mere assumption. He admits there is a great difference between what an engine can pull on the different parts of the line and that an engine indicative of a certain load on one division would be indicitive of quite a different load on another division. (R. p. 200.)

Again these questions were put to Mr. Hamilton, and he stated that he assumed the size of the engine, indicated by its weight, indicated the weight and speed of the train it was expectd to pull, and that was the use that the train got out of the track regardless of how the necessity for its upkeep arose—whether elemental or straight wear and tear.

He says that it would not disregard the tonnage behind the engine or the speed of the engine, because the engine indicates the service of the train and is one of the prime factors.

"Q. You assume that the engine hauls what it could haul behind it?

A. Yes, sir.

Q. That is assuming an ideal operating condition.

A. That assumes conditions we attempt to get; not putting too fast an engine on too slow a train.

But by putting on that engine a load its size would indicate it should haul at a given speed."

MR. MOORE: This assumed condition exists on your road?

A. Yes, sir.

MR. HILL: Does anybody else get that ideal condition? Is not that conjecture on your part?

A. It is not conjecture. We think we are very close to that assumed condition on the Frisco, as will develop before we finish here." (210 and 211.)

Mr. Nay testified on the same subject. He says the Committee had a great deal of discussion as to the best basis to use for this division of expenses. A study was made of the engines used in freight and passenger service, and it was found that passenger engines which hauled trains at a high rate of speed were practically of the same weight as the larger freight engines which move slower but pulled heavier trains. In some cases the passenger engines of those high speed trains are heavier. They found the weight of the engine really represented the service performed as to weight and speed.

The argument made to support the old Formula was that the speed of the passenger train offsets the greater weight of the freight train. The Committee concluded that the weight of the engine actually would reflect the speed in the case of the passenger engine and in the case of the freight engine the weight which was pulled and also the speed. That is, for greater speed and heavier weight you must have a heavier engine. For slower speed and lighter train, you may have a lighter engine. Then again when it comes to a portion of your expenses for ties, rails, track material and ballast, to a certain extent the heavier the engine the greater would be the damage, so that the weight is an important factor.

Frequently bridges are constructed and heavier rail put in and additional ballast on account of the heavier engine put on the track, not because of heavier cars. (R. p. 309.)

In the Iron Mountain Rate Case, he had testified that the same basis should be used for dividing between freight and passenger that was used for dividing between local and through trains, as far as Maintenance of Way expenses was concerned, but he had changed his mind on that subject now. (R. p. 391.)

He states that the Maintenance of Way expense between the local and through train should be divided on the gross ton mile, and between the passenger and freight on the engine ton mile, because there was not much difference be-

tween the speed of the freight trains while there was a difference between the speed of freight trains and passenger trains, and the engine ton mile took that difference in speed into consideration by reflection. (R. p. 392.)

He says this is an approximation, but he thinks the closest that they have been able to get to it at the present time. When he testified in former rate cases he thought the revenue basis was the best for dividing this expense (R. p. 393) and that he is not more honest now than he was then in presenting this, the engine ton mile, as the best approximation for it. (R. pp. 393-394.)

He states that the engine does represent what is behind it in that the heavier engine pulls a heavier train. He doesn't mean that the engines pull to their maximum capacity, for few roads have enough business to load them up to their maximum capacity, but the heavier engine will be put to the heavier trains to haul, and where the greater speed is required. He says it is not a fact that there are plenty of big engines hauling little trains. (R. pp. 407-408.)

He states that the engine is used as a representative of the load behind it and he was asked why the roads had not made up statistics for what was behind it and he said that they believed engine ton miles would sufficiently represent the use of the property rather than to put the whole thing in, because of the element of speed. (R. p. 409.)

He says that the engine does represent speed also; that they made a test on the Rock Island and developed what is called speed ton miles. It cost less to compute engine ton mile than speed ton mile as these were substantially the same they adopted engine ton mile.

In the preliminary Formula which was prepared by the Committee the method of dividing this account was left open, and four ways suggested: Speed ton mile, engine mile and train mile and cost accounting, and gross ton mile were mentioned. (410-411.)

This is the substance of all the testimony to sustain the engine ton mile.

The State introduced Mr. Mayer, who discussed this subject at great length, and was cross examined upon it with great severity. The opinion evidence of Mr. Nay, Mr. Hamilton and Mr. Mayer is not regarded as of any special moment; but it has been set out herein so that the Court can see its value and also see that the same class of testimony was before the Interstate Commerce Commission as is here when it rejected the engine ton mile for this basis.

Your attention, however, is specifically called to Exhibit "CC" filed by Mr. Mayer. (R. p. 2263.)

Mr. Mayer's attention was called to the testimony of Mr.

Hamilton and Mr. Nay which has just been abstracted and he was asked if he had made any investigation of the correctness of their assumptions, and if so what they were and to develop the facts fully. (R. pp. 544-546.)

He then explained how he had from the Company's records and from their time tables, built up this Exhibit "CC" which covers the two main divisions in the State of Arkansas of the Frisco road, the Ozark and Central Division, for the four months of 1907 and the two months of 1913. (R. p. 549.)

On the first Division during the month of September, 1907, the east bound trains carried 97 per cent of their engine rating: for the same month the west bound train carried 62 per cent. For October the east bound carried 79 per cent and the west bound 64 per cent. In November the east bound carried 75 per cent and the west bound 42 per cent, and in December the east bound carried 67 per cent and the west bound 44 per cent; in the month of November, 1913, 82 per cent of the rating was hauled east bound and 88 per cent west bound. In December, 1913, the east bound was 84 per cent of the rating and 80 per cent west bound. (R. p. 551.)

This means that the trains operated in December, 1913, were loaded more heavily than they were in November, 1907, by 33 per cent; there was either more cars or more in the cars. (R. p. 552.)

In November and December, 1913, there was also a showing of the difference between the local and through freight train. This data was not available for 1907. (R. p. 552.)

In the month of November, 1913, on the Ozark Division, the east bound through carried 87 per cent of the rating, the local train 61 per cent. In the opposite direction, the same time the through train carried 93 per cent and the local train 55 per cent. Other statistics are given, but these are probably sufficient to prove the point of the Exhibit which is that the engine does not and cannot represent the load behind it. (R. p. 553.)

Mr. Mayer states that the passenger train mileage is fairly constant and shows from Exhibit 38 that such is the case on this road. (R. p. 553.)

He shows from these facts that the result of the use of this factor is to unduly burden the passenger traffic.

He gives similar statistics on the Central Division, and as shown in the detail is about the same as on the Ozark Division, a great variation being shown in east bound and west bound and in local and through, and a great difference in each month. (R. pp. 554-556.)

The passenger train records are made up differently; in-

stead of figuring the potentiality of the passenger engines they merely show the train miles handled. Two trains were taken on the Central Division to illustrate this point.

Train No. 4 handled six cars on its daily trip from Fort Smith to Monett, 134 miles, and train No. 6 carried seven cars and the engines on these trains were identical; the mileage was identical; one made 804 car miles and the other made 938 car miles, yet they make the same number of engine ton miles, although the train behind them was different. In other words, there was 16 per cent more work done by one than the other and 16 per cent more use of the right of way by one than by the other, yet the same engine ton mileage results. Many other examples just like this are given. (R. pp. 559-560.)

Mr. Mayer takes up each of the reasons given by Mr. Hamilton and Mr. Nay and combats them with the statistics found in this Exhibit.

In rebuttal the railroad called Mr. Frates. Mr. Frates is the General Superintendent of the First Division of the Frisco Railroad, consisting of about one-half of the system in which Arkansas is included. (R. pp. 805-806.)

Mr. Frates shows the established rating shown on the time tables is obtained by pulling tests under normal conditions and represents the maximum tonnage that can be pulled over the ruling grade under normal conditions and at a speed of ten miles per hour. (R. p. 806.)

On each division the road has expedite trains, trains which handle high class freight, stock, meat and perishable freights of all kinds, and the road to get this expedite freight moved rapidly, sacrificed tonnage to speed. (R. p. 807.)

He explains many operating conditions in regard to the loading of trains, the weight and track conditions effecting speed and load, the difference in operation of local and through freight trains, and the practice to assign an engine to passenger service with certain reserved power. (R. pp. 810-813.)

In fact he gives from the operating standpoint, the reasons why the tonnage is different at different times and different directions and on different trains. His testimony accounts for the concrete facts shown in Mr. Mayer's Exhibit "CC" and is abundant proof that the engine does not represent the load behind it.

On cross-examination these illustrations of operating conditions were brought out. If the Assistant Superintendent at Monett had twenty cars of expedite freight to go to Fort Smith and an engine available for that service, and in the judgment of the Superintendent these cars ought to go at

the rate of twenty miles an hour, and that was as many as that engine could carry at that speed, such a train would be made up and sent with such load and at such speed. If in the next day or two the Superintendent found forty cars of dead freight that did not need expediting and that same engine was available and according to its ratings could carry forty cars ten miles an hour, that train of forty cars would be made up and sent to Fort Smith with that engine at a speed of ten miles an hour. In each instance the engine ton mileage would be identical.

The same engine on the one day carrying forty cars and on the other day carrying twenty. This illustrates the railroad's practice in handling expedite or dead freight. (R. pp. 813-814.)

On the passenger service an engine is provided with power over and above what is needed to handle that train, so that they could pick up extra cars, make up for delays and untoward weather conditions. (R. pp. 817-818.)

The difference in grades in different parts of the line materially affect the loading capacity of the train behind the engine. For instance, from Jonesboro to Memphis, engines of 11 tonnage class can carry 1850 tons and from Memphis to Jonesboro only 1350 tons. (R. p. 818).

Of course the engine ton mileage would be the same, but there would be 500 tons difference in the load behind the engine, and the engine in each instance working up to its potentiality.

His roads send out local trains, as do all roads, on fixed schedules. It also sends out high class merchandise trains on schedule every day whether they have a full tonnage or not. (R. pp. 819-820.)

His road handles a great deal of fruit and this is moved fast and the tonnage is sacrificed for speed. These trains run 25 or 30 miles an hour, an average speed of 25 miles an hour. (R. pp. 821-822.)

Mr. Hamilton and Mr. Nay both lay stress on the value of the engine ton mile as representing speed as well as weight and Mr. Hamilton put into the record a statement that the speed of the freight train here shows an average of 19½ miles an hour and the passenger trains 32. (R. p. 259.)

Here is a large class of freight trains running as fast as passenger trains, their average is considerably above the general average of freight trains. The speed factor vanishes on an examination of the real operating conditions.

Mr. Symons was called in his rebuttal to explain the potentiality and rating and tractive power of locomotives. (R. p. 797.)

The Interstate Commerce Commission has given a great deal of consideration to this subject. It is a matter which it has investigated for some years. It has been investigating it for the purpose of establishing proper accounting by the railroads and on June 15th, 1915, effective July 1st, 1915, promulgated a rule governing the preparation of operating expenses between freight and passenger service; and in an introductory note to the rules then promulgated it was stated: "The representatives of State Commissions advocated the use of 'gross ton miles' as a basis while the representatives of railroads favored 'engine ton miles.' The discussion seemed to be somewhat influenced by the possible effect of these respective bases on the statistical evidence which might be introduced in passenger fare cases. It may fairly be said that the facts and arguments presented do not warrant the final approval by the Commission of either the gross ton mile or the locomotive ton mile at this time." (37 I. C. C., p. 13.)

On the application of the carriers for increase in passenger fares in western territory, this question became the determining element as to whether or not increase should be granted and if so to what extent.

The finding of the Commission reported under the style of "Western Passenger Fares," 37 I. C. C., 1, goes in great detail over the contentions in regard to the separation of operating expenses between freight and passenger. The discussion of this subject begins at page 12. It will be seen by an examination thereof that exactly the same contentions were made in the support of engine ton mile, which were made herein for it by Mr. Nay and Mr. Hamilton. Basis No. 2 therein referred to is the engine ton basis, and of it the Commission said.

"Basis 2 rests upon the claim that the greater speed of the passenger trains creates a greater degree of wear upon the track and other structures than would be the case were the passenger trains run at the same speed as freight trains. Inasmuch as this greater speed of passenger trains necessitates more power than would be required were the speed less, it is asserted that the weight of the passenger locomotives bear some direct relation to both the weight and the speed of the trains they draw. The locomotive ton-mile therefore to a certain extent measures the work done by the engines in each class of service, and to a certain extent forms a measure of the wear on track and structures. There is, however, a large proportion of the expenses incident to the maintenance of way and structures that is influenced only to a small extent and certain expenses are not influenced at all

by the weight and speed of the trains that pass over the track. The action of the elements and deterioration of materials will go on whether trains pass over the tracks or not. The effect of these natural agencies varies greatly with the location, the materials used in track structure, and with the season. It is uncertain how much of any particular item of expense is due to action of the elements and how much to wear. For example, no one can tell just how much of the expense incurred in the replacement of ties that are unfit for further use is due to the action of the elements and how much to the wear caused by the movement of trains. Various assumptions are indulged, as that 60, 70 or 80 per cent of such expenses are due to action of the elements and the remainder to wear. These assumptions appear to us to rest on uncertain ground. There is no doubt but that, other things being equal, the high velocity of passenger trains, as compared with freight trains, necessitates a better maintenance standard on that account.

The testimony of a number of operating and accounting officials of long experience supports the locomotive ton-mile method as in their judgment the most logical and practical method for the division of these expenses. The results of apportionments upon this basis compare closely with the results obtained by the use of Basis No. 3, shown on the same Exhibit. This basis proposed the division of the maintenance of way and structures expenses between passenger and freight in the proportion which the revenue passenger train-miles bear to the revenue freight train-miles. This basis may be said to rest, in the main, upon the assumption that these expenses should be divided between passenger and freight upon the use that is made of the track and structures by these two main branches of the service. It does not directly take account of the fact that passenger trains move faster than freight trains, nor does it take account of the fact that freight trains are heavier and longer than passenger trains."

The Commission rejected the various bases suggested, and in that case made the division on the percentage of the direct costs which were located in the one service compared with the other. The result was the assigning of 61.5 per cent to freight and 38.5 per cent to passengers. (See page 26, Supra.)

In this case the engine ton mile assigns to freight 51 per cent. (R. p. 854.)

The difference between 51 per cent and 61½ per cent is necessarily error, if the Interstate Commerce Commission is correct.

Where erroneous or doubtful sums go to make up the plaintiffs' case in rate suits, the defendants do not have to prove the extent or amount of them when they prove them to exist or likely to exist, the plaintiff fails. In the case of the Railroad Commission of Louisiana vs. Cumberland Telegraph and Telephone Company, 217 U. S., 414, there was evidence indicating that the figures submitted by the plaintiff were erroneous. It was insisted that the extent of error should be worked out. The Court, however, said: "If the onus rested upon the Commission to show these facts, it is evident that the obligation has not been fulfilled; but it is just here that the difficulty lies. It was obligatory upon the complainant to show that no part of the money raised to pay for depreciation was added to capital, upon which a return was to be made to stockholders in the way of dividends for the future. It can not be left to conjecture, but the burden rests with the complainant to show it. It certainly was not proper for the complainant to take the money, or any portion of it, which it received as a result of the rates under which it was operating, and so to use it, or any part of it, as to permit the company to add it to its capital account, upon which it was paying dividends to shareholders. If that were allowable, it would be collecting money to pay for depreciation of the property, and, having collected it, to use it in another way, upon which the complainant would obtain a return and distribute it to its stockholders. That it was right to raise more money to pay for depreciation than was actually disbursed for the particular year there can be no doubt, for a reserve is necessary in any business of this kind, and so it might accumulate; but to raise more than money enough for the purpose, and place the balance to the credit of capital upon which to pay dividends, can not be proper treatment. The Court below said it was impossible to find out from the books how much of this had been done, and it treated the fact as one to be explained by the Commission, and not by the complainant. In other words, while this fact was a material one, the onus was placed upon the Commission, and not the complainant, to show it. We think, on the contrary, that the obligation was upon the complainant. Now, although the books, it is said, do not show how much money collected for depreciation has been, in fact, used to increase the capital of the complainant, upon which dividends were paid to stockholders, yet, still, even if the books do not show accurately, or even at all, what disposition was made of these moneys, at any rate the officers of the complainant must be able to make up some reasonable approximation of the amount, even if it be impossible to state it

with entire accuracy; and this duty rests with the complainant, in order that it may discharge the duty devolving upon it to prove that the rates were not unreasonably high under Order No. 488, or, in other words, that they were unreasonably low under order No. 552. It may be that the sum, if any, thus used, was not enough to affect the claim that the rates under discussion were unreasonably low. The evidence is insufficient to show clearly that which complainant is under obligations to show."

It is possible that accountants could take these Exhibits and recast them from beginning to end and trace the extent of this error. That it is in error, this Court must be bound to recognize on account of the evidence in this record and the reasoning of the Interstate Commerce Commission after a most thorough investigation. The Commission has a better opportunity to obtain full data in regard to these matters than could be put into the record in a rate case where this is just one of the many other issues to be developed. Exhibit "CC" of Mr. Mayer and the testimony of Mr. Frates unquestionably prove that the engine does not represent the load behind it, or its speed, and that was the basis upon which the experts, Mr. Nay and Mr. Hamilton, justified its use.

The Interstate Commerce Commission did not have the data for all the direct costs and only applied such as it did have. If all of that data had been worked up in this case, as indicated from the report of the Commission on this subject, the percentage assigned to freight would doubtless have been much higher than 61.5 per cent. In fact the statistics in that case would indicate that the relation of the passenger and freight should be about 30 and 70, and the working up of all the data called for by the Commission will probably bring about such a percentage. That data is not before you; it is not in this record, and nothing but conjecture is left as to the extent of this error. Certainly it is more than 10 per cent of the principal item of expense of the railroad in the Maintenance of its Way.

It is confidently submitted that the use of this factor alone without considering any other matters presented herein, is sufficient to invalidate the Formula, and with it falls the plaintiff's case.

TRANSPORTATION EXPENSE TO DIVIDE PROPERTY.

The Fomula on page 38 provides for the apportionment of the value of Right of Way and Structures between freight and passenger, line and terminal, state and interstate, mail

and express, on the basis of the expense for the maintenance of each of the facilities, and the Frisco modifies the Formula by substituting the Transportation expenses alone as the basis for the making of these divisions of the property denominated Right of Way and Structures. (Formula, pp. 38-39.)

Two propositions are involved herein: The first is whether expense is the correct basis to apportion property between classes of traffic; and the second is, can Transportation expenses alone be taken for this purpose?

Mr. Hamilton justified the use of the expense basis largely upon the testimony given by Mr. Ludlam and Mr. Wharton in the Arkansas case that such was a good basis of division. (R. p. 249).

The testimony of Mr. Wharton and Mr. Ludlam, the expert accountants working for the State in the Arkansas case, was put into the record and it is seen therefrom that each one of them was considering the expense as compared with the revenue basis of dividing property, and each of them considered the expense basis better than the revenue basis. Neither of them considered the use of Transportation expenses alone, but were speaking of the general proposition of using the total expenses for dividing the property and preferred it to the revenue basis. (R. pp. 444, 445 and 460.)

Mr. Hamilton says in support of it that the conglomerate unit of Transportation expense reaches every current of the railroad's activity; that the railroad is in business for the purpose of transporting freight and passengers, and that is the use it gets out of its track and that the Transportation expenses were reflctive of the common ground of freight and passenger. (R. p. 251.)

Mr. Hamilton was questioned as to why the Transportation expense instead of the engine ton mile basis was used to divide the property between freight and passenger when the engine ton had been used to divide these expenses between freight and passenger. He put in the result of a computation showing the difference in results had the engine ton mile been used for this basis instead of the transportation expenses basis. Had the apportionment of line values on the engine ton mile basis been taken for the year 1913, as an example, the concrete effect would have been to reduce the value of property assigned to intrastate freight 19 per cent and to increase the value of property assigned to intrastate passenger 18 per cent. In amounts it would change the return on intrastate freight as shown on Exhibit 22 from 1.07 per cent to .23 per cent, and to eliminate entirely the return of 2 per cent on intrastate passeger and leave the re-

turn upon the total intrastate business so small that it could not be found with a microscope. (R. p. 446.)

It will be remembered that this Exhibit 22 is made upon the valuation of property 27 per cent higher than that agreed upon and that without the corrections that materially change the return as shown in Exhibit "Y," and that it also carries with it the alleged extra cost percentage of 15.43 per cent on intrastate passenger and 319.58 percentage on intrastate freight. Hence the result of this change cannot be measured by the figures as given by Mr. Hamilton, but the fact that a change from the Transportation expense basis to the engine ton mile basis would work a radical difference is significant.

Mr. Nay says that the total line values are between 80 and 90 per cent of the total and the station values represent the balance of this account. As these values run into millions the effect of changing that basis upon them is very apparent. (R. p. 427.)

Mr. Nay was questioned at some length as to the reason that the expense basis could be representative of the use of the property.

In the confident belief that this Court can understand the reasons he gives therefor you are referred to pages 427-431.

But Mr. Nay does not approve either the Formula or the Frisco modification thereof in regard to this basis for the division of the line values common to freight and passenger. He prefers the Formula to the Frisco modification and in the Formula he would substitute engine ton miles for revenue train miles. (R. p. 425-427.)

Mr. Mayer questions the correctness, in the first place of using the expense basis to divide the value of the property, and in the second place if the expense basis is accepted the use of the Transportation expenses instead of all expenses (R. pp. 568-570), and gave at some length his reasons therefor.

Relating to the use of the Transportation expense alone he says: "To assume that they can be taken means that there is a consistent relation between the passenger one mile and the ton of freight one mile. In other words, suppose we had the actual expense of running a freight train, if it could be secured, and the actual expense of running a passenger train, and suppose they were equal: The passenger train is run according to schedules widely published. If ten people get on that is its train load; if twenty get on that is its train load. On the other hand, the freight train is run according to the necessities of the business; that is, they do not run them unless they have to, and they try to get a full train load

for them. * * * Now you have this relation: If your freight train costs an equal amount to your passenger train, and your expense of handling the passenger train, we will say is $20.00 and the number of passengers riding is twenty, then you have the expense at $1.00 per mile. In your freight train with an expense of $20.00 you will have 3,000 tons or 2,000, then your expense will be one cent a mile. That shows up actually just what the relation is in the expense. Here you have a train run for comfort, luxury and convenience. On the other side of the equation you have a train run up to efficiency. You cannot put any more business onto your freight train if you fill it properly, whereas your passenger train has to run whether you have a half or a quarter train load on them." (R. pp. 469-470.)

The status of the record is this: Mr. Nay does not agree with the Formula or with the Frisco modification thereof. Mr. Mayer disagrees entirely with the Formula and the Frisco modification. Mr. Hamilton sustains the Frisco modification. Three learned doctors of accountancy speak on this subject; no two of them are in accord. This basis for dividing a good many millions of dollars is supported alone on Mr. Hamilton's expert opinion.

THE COURT'S OPINION.

In addition to the errors pointed out in the course of the argument to statements in the opinion of the Court attention is called to these following additional errors:

1. The Court states that considerable evidence was introduced on the part of the Company to establish the value of the road. "But later a stipulation was entered into between the parties agreeing that for the purposes of this case the average value per year of the property in the State of Arkansas for the years 1910, 1911, 1912 and 1913 was $17,924,-441.75, the value fixed by the State Taxing Board, and that the gross earnings in the State for the four years had been $16,688,486.86 divided as follows", and then follows a division in dollars and cents of intrastate freight and passenger and interstate freight and passenger. (R. p. 916.)

The Court evidently misunderstood the stipulation; there is only stipulation in the record on this subject, which reads as follows:

"It is stipulated and agreed that the value of the property of the St. Louis & San Francisco Railroad Company in the State of Arkansas used in operation during the period covered by the Exhibits filed by the complainant was, for the calendar year 1907, $15,692,338.00, and for all periods thereafter the following Additions and Betterments are to be added to said amount:

During the fiscal year ended June 30th, 1908	$895,842
During the fiscal year ended June 30th, 1909	$108,473
During the fiscal year ended June 30th, 1910	$748,853
During the fiscal year ended June 30th, 1911	$375,503
During the fiscal year ended June 30th, 1912	$311,947
During the fiscal year ended June 30th, 1913	$165,340"

(R. pp. 906-907.)

There is no stipulation as to the gross revenue or the division of the gross revenue, or as to average value of the property. The whole stipulation is as above quoted.

The Court made many calculations which are apparently based on this mistaken view as to the scope and effect of the stipulation.

2. The Court says: "It was shown also by the undisputed evidence that these were normal years." (R. p. 916.)

The purport of several of the State's Exhibits was to bring these years to a normal average.

The statistics put into evidence by the Railroad and the supplementary ones put in by the State on this subject cer-

tainly prove that 1907 was not a normal year, and which was the normal year of these four years (they contained many variations, according to the statistics filed by the Railroad, in operating conditions) cannot be determined.

3. The Court says it was shown by the evidence that the months of November and December, 1913, were normal months as reflective of the year's business. Certainly the normality Exhibits 34-41, put in by the Railroad, and the averaging Exhibits put in by the State, demonstrate that they were not normal months.

4. The Court states at considerable length the views of Mr. Mayer and the errors of Mr. Mayer. Evidently on many of these propositions the Court has not understood Mr. Mayer's position. But these differences, or a correct presentation of Mr. Mayer's views, are so wholly immaterial to the issues that they will not be reviewed. Attention is merely called to them here so that this Court, in reading the opinion of the trial Court and in reading Mr. Mayer's testimony, will see that the Court has misunderstood Mr. Mayer on many matters, and that no concession is here made that the Court has correctly understood Mr. Mayer's criticisms.

The same thing is true of the Court's statements of Mr. Simson's testimony on many propositions, particularly his adaptation of the Berry Table to the Formula.

5. The Court misapprehended wholly the correction of the terminal costs and line costs as made by the State.

The Court said that it appears from the testimony of the accountants for both sides that the difference in the terminal figures had no relation to the ultimate correctness of the Company's Exhibits or to the equating proportions used by the Company to give effect to its new Formula, so far as the State is affected, while Mr. Simson's Formula would result in increasing the Company's showing of cost charged to the intrastate business in Arkansas. (R. pp. 925-926.)

The error made by Mr. Hamilton in computing the terminal and line unit costs was an error as to the proper method to apply in his own Formula.

Mr. Simson corrected it merely for the sake of accuracy. His Exhibits "B" and "D" used Mr. Hamilton's cost units and these Exhibits showed the constructive expenses to be much higher than the constructive expenses computed on the corrected units. By corrected unit is not meant the real unit of either terminal or line cost, but the real unit mathematically correct under the Formula and the Exhibits.

The use which the State made of these units was to demonstrate, as has been shown at great length in one of the chapters herein that the units as worked out under the Formula

are radically wrong in that they create an expense of about five million dollars a year above the actual expenses of the Railroad Company, thereby to prove that the Formula is fundamentally wrong.

Unfortunately the State was unable to make this position clear to the trial Court, as shown by his misapprehension of it. (See pages 925-926.)

6. The Court after making calculations, 927-928, says: "Nor would the result differ materially if we accept the figures of the State's accountants and apply them to the intrastate business of Arkansas, although they are made on the basis of net earnings to the entire system, an assumption without any basis to support it."

The Court overlooked the fact that the calculations made on the net intrastate earnings were based on the alleged extra cost of 15.43 per cent intrastate passenger and 319.58 per cent freight. This is but assuming the major and minor premises of the railroad to be correct, viz: that the Formula applied correctly the statistics of 1913 and that the equating of them back to 1907 was correct.

It is needless to say that no system of calculation where the intrastate bears such a burden would show a return which is compensatory.

7. On page 930 the Court said: "Exhibit 'O' of Mr. Simson is based on a Formula spoken of as Mr. Douglass', discarded in this case because found to be erroneous by Mr. Simson and admitted to be so by the Company's accountants."

The evidence shows that Mr. Simson approved the plan of the Douglass Formula of assigning expenses and revenues to the State, but he found errors in the assignment, not in the Formula.

Mr. Hamilton admitted many of these errors and criticized not the Douglass Formula but the Company's Formula for dividing passenger and freight which was used for comparative purposes.

Mr. Hamilton's criticism may also have run to the Formula for assigning to States, but the evidence is not so understood. The point, however, of this reference is merely to show that the Court misapprehended the force of the various Exhibits based on the old Formula contrasted with the new Formula as he evidently believed, as shown by this quotation, that the old Formula was discarded by everyone, and no value could be attached to it, whereas Mr. Hamilton repeatedly stated that there was little difference between it and the new Formula, and evidently his criticisms which the Court had in mind were of the Formula used by Mr. Doug-

las and the Railroad for separating passenger and freight, which was only used for their operating comparisons as stated in Exhibit No. 23.

8. The Court stated, page 930, in referring to the error of $23,000.00 found in the Memphis terminal expense assigned to Arkansas, Exhibit "G," that this was caused by the old or Douglass Formula. The error was not on account of the Formula but on account of change in methods as explained in Mr. Simson's testimony and admitted by Mr. Hamilton to be the fact.

This is merely referred to to show that the Court did not grasp the significance of the Formulas which are used for the equating process.

9. Finally it is stated that the claim of other errors in the Company's statistics have been carefully examined by the Court, but found to be not sustained by the evidence or are so insignificant in amount that they would not affect the final result to the extent of one-hundredth of one per cent.

The Court evidently overlooked the testimony of Mr. Hamilton wherein he admitted many of these errors. Exhibit "G" just referred to bringing an error into the equation of $23,000.00 was admitted.

Exhibits "V," "W" and "X" brought forward in Exhibit "Y," are also practically admitted as heretofore pointed out, and they show errors to such an extent that they raise the rate of return as shown by Exhibit 61 of the Railroad, which does not contain the corrections for the four months' period from 4.50 per cent as therein shown to 6.53 per cent as shown in Exhibit "Y."

While this Court has repeatedly stated that it will determine the facts in these rate cases and test the constitutionality of state action by the testimony unfettered by findings of Masters or conclusions of trial Courts (Knoxville vs. Knoxville Water Co., 212 U. S., 1), yet, very properly, the Court will consider with great respect the opinion of the trial Court. (Loeb vs. Trustees of Columbia Township, 179 U. S., 472; Memphis vs. Cumberland Tel. & Tel. Co., 218 U. S., 624.)

Therefore, it is considered right that attention be called to the errors made by the learned trial judge.

Respectfully submitted,

JOSEPH M. HILL,

Special Counsel for the State of Arkansas.

Supreme Court, U. S.
FILED
NOV 15 1915
JAMES D. MAHER
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No. 252

In the Supreme Court of the United States

J. SAM ROWLAND, WILLIAM F. McKNIGHT, AND THOMAS E. WOOD, RAILROAD COMMISSIONERS OF THE STATE OF ARKANSAS,
APPELLANTS,

vs.

SIDNEY E. BOYLE, AND ST. LOUIS & SAN FRANCISCO RAILROAD COMPANY,
APPELLEES.

Motion to Advance

JOS. M. HILL,
Attorney for the Appellants.

GALVERT-MORRIS PRINTING CO., FT. SMITH, ARK.

No. 648

In the Supreme Court of the United States

J. SAM ROWLAND, WILLIAM F. McKNIGHT, AND THOMAS E. WOOD, RAILROAD COMMISSIONERS OF THE STATE OF ARKANSAS,
APPELLANTS,

vs.

SIDNEY E. BOYLE, AND ST. LOUIS & SAN FRANCISCO RAILROAD COMPANY,
APPELLEES.

MOTION TO ADVANCE.

Come the appellants herein, the Railroad Commissioners of the State of Arkansas, and pray the Court to advance this cause for hearing as one of great public importance, and state:

HISTORICAL.

In August and September, 1908, the various railroad companies operating in the State of Arkansas applied for and were granted temporary injunctions against the Railroad Commission from enforcing a schedule of freight rates promulgated by it contained in the Tariff known as Standard Distance Tariff No. 3 and from enforcing a passenger rate of two cents per mile enacted by the General Assembly of 1907.

That there were over twenty of said suits, involving all of the railroads, with a few exceptions, in the State of Arkansas, and of said suits, only two went to final decree, to-wit: The suit of the St. Louis, Iron Mountain & Southern Railroad Company and the suit of the St. Louis & Southwestern Railroad Company; that the suits of the other railroad companies, by mutual consent, were left upon the docket of the district court awaiting the final disposition of the suits of the Iron Mountain and Southwestern Companies; that the district court in the suits of said Iron Mountain and Southwestern Companies made perpetual the temporary injunction theretofore granted, and the State, through its Railroad Commission, appealed from said decrees to this Court, and this Court, in June, 1913, reversed said decrees with directions to dismiss the

complaints without prejudice. Immediately thereafter this appellee company put into effect Standard Freight Distance Tariff No. 3 and the statutory two-cent per mile passenger rate.

That said Railroad Company prayed and was granted by the district court time in which to recast its exhibits and complaint and to prepare its evidence to meet the rule announced by this court in such cases in the series of decisions known as the State Rate Cases, involving the rates in Minnesota, Missouri and Arkansas.

THE ISSUES.

The appellee Railroad Company on final hearing presented to the Court a Formula which purports to properly distribute revenue and expenses and to apportion property between freight and passenger traffic and between intra-state and inter-state freight, and intra-state passenger and inter-state passenger traffic; that said Railroad Company contended that said Formula met the requirements of the opinions of this Court in said State Rate Cases as to the proper evidence to show that rates promulgated by State authority were confiscatory, and that the periods represented by such tests were representative of the actual condition of the affairs of the company, and that the methods used

under said Formula to obtain the condition of the affairs of the company for the periods under inquiry actually represented the condition of the affairs of said periods. The State denied each of said contentions, and contended that the Formula did not meet the requirements of this Court as to the class of evidence necessary to invalidate State made rates; that the test periods were not representative; that the methods used for arriving at the condition of the affairs of the company for the period of inquiry were unsound and uncertain, and not reflective of the true condition of the affairs of the company, and that proper calculations of the intrastate expenses and revenues and the proper apportionment of property of intra-state and inter-state business showed that the rates attacked were yielding a compensatory return upon the property devoted to the State traffic. The district court sustained the Formula and issued a perpetual injunction against the enforcement of the State freight and passenger rates. The appellee Railroad Company at once put in force a schedule of State freight rates higher than the rates promulgated in Standard Distance Tariff No. 3, and put in force a 3-cent per mile passenger rate in lieu of the statutory 2-cent per mile passenger rate. The General Assembly of Arkansas directed the Railroad Commission to prosecute this appeal.

THE PUBLIC IMPORTANCE OF THE CASE.

1. Every passenger and every shipper of freight in the State of Arkansas on the line of appellee Railroad Company is daily being required to pay a rate in excess of the rates promulgated by the State, and said passengers and shippers have no evidence furnished them by the Railroad Companies of such excess in rates.

That the railroads whose decrees were reversed by this Court heretofore contended that in the interval between the decree perpetuating the injunctions and the reversal thereof by this Court that the injunction bonds were not liable for the excess rates paid by passengers and shippers of freight, and these appellees are informed that this Railroad Company is so contending in litigation growing out of the reversal of the Missouri Rate Cases; that the appellee Company is in the hands of receivers, and has given an injunction bond of only $200,000, which is wholly inadequate to repay shippers and passengers, should this decree be reversed and it be finally determined that shippers and passengers are entitled to have such excess paid to them.

2. That the Formula in this case is now being used by the appellee Railroad Company and other Railroad Companies as a basis for contesting State

Rates in Oklahoma, Missouri, Texas, Kansas, and probably other states; that it is of the utmost importance to the Railroads and to the States that said Formula receive a speedy construction by this Court.

3. That after the decree in this case three of the Railroad Companies operating in Arkansas, to-wit: St. Louis, Iron Mountain & Southern Railroad Company, St. Louis Southwestern Railroad Company, and Chicago, Rock Island & Pacific Railroad Company applied for and obtained temporary injunctions against the enforcement of the statutory passenger rate; that as a result of the decrees in this case and of the subsequent decrees in said other cases the statutory rate of passenger fare is enjoined on over 95 per cent of the railroad mileage in said State; that the district court has continued the hearing of the temporary injunctions of said three Railroad Companies until after this Court has had time to pass upon this appeal and until the Legislature may take action in regard thereto.

4. The regulation of all railroad rates in Arkansas, both freight and passenger, by the Railroad Commission and the General Assembly of said State is affected by the decision of this Court in this case.

TIME OF SETTING.

The appellees state that they have diligently prosecuted this appeal and the Clerk of this Court informs them that the record will be printed within .....days.

The appellees further state that their brief cannot be properly prepared within less than sixty days after the record is printed.

WHEREFORE, the appellees pray that this cause be advanced as one of great public importance, and that they be granted until the ..... day of ..... to file their briefs herein, and the appellees be granted such time as may be necessary to properly prepare their brief and that the cause be set for oral argument thereafter at such date as may suit the convenience of the Court.

JOS. M. HILL,
Attorney for the Appellants.

APPELLANT

REPLY

BRIEF

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No. 648

In the Supreme Court of the United States

J. SAM ROWLAND, WILLIAM. F. McKNIGHT AND THOMAS E. WOOD, RAILROAD COMMISSIONERS OF ARKANSAS, *Appellants,*

vs.

SIDNEY E. BOYLE, EXECUTRIX, AND ST. LOUIS & SAN FRANCISCO RAILROAD COMPANY, *Appellees.*

Appellants' Brief in Reply

ARGUMENT.

THE ISSUE.

On page 2 of the appellees' brief it is stated: "Counsel assume that the issue in this case is whether the earnings were compensatory when the preliminary injunction was granted." The complaint alleges that the rates were confiscatory and asked relief against them by preliminary injunction and perpetual injunction. The circuit judge granting the preliminary injunction, now a member of this Court, evidently regarded the issue to be whether the earnings were compensatory when the preliminary injunction was granted, because he required a bond conditiond that the railway defendant keep an account of the rates and fares charged over the inhibited rates, not that they might in the future become confiscatory, "and further conditioned that if it should eventually be decided that so much of this order as inhibits the enforcement of existing rates should not have been made, that the said railway defendant, within a reasonable time to be fixed by the Court, refund in every instance to the party entitled thereto, the excess of charge over what would have been charged had the inhibited rate been applied, together with lawful interest and damages." (Record

page 35.) His opinion on the subject also discloses that this was the issue presented to him and the showing was satisfactory to entitle the railway to a preliminary injunction. In Re Arkansas Rates, 163 Fed. Reporter, 141.

On page 3 it is contended that if it should turn out that the rates yielded a reasonable return during the four months' period (referring to the financial statement of the four months of 1907, upon which showing the preliminary injunction was granted), but that during the succeeding four years the return was confiscatory, the rates could not be held reasonable. This position is unsound. If for 1907 it was now proved that the rates were compensatory, then the preliminary injunction was erroneously granted, and the bond guarding against such contingency would be liable, notwithstanding that in a later year, say 1913, it was proved that these same rates were then confiscatory. This proposition is not important here, for the subsequent years, as well as 1907, show a return well above the confiscatory level, yet there is this further point in regard to the preliminary injunction: It was obtained on statistics of the four months' period of 1907 purporting to give a financial showing of the road, and on the face of it showed a confiscatory return of the rates sought to be enjoined. In this showing, however, the property was divided between state and interstate on the gross revenue theory. The expenses were divided between state and interstate on the gross revenue theory, and to the state expenses, on strength of the affidavits of experts, was added 25 per cent extra expense for intrastate passenger and 100 per cent extra expense for intrastate freight. (R. 58, 59.)

In addition to these fundamental errors it was proved on the trial of this case through Mr. Hamilton, the railroad accountant who prepared the exhibits herein, that the original statistics submitted by Mr. Douglas, the Auditor of the road, to Judge Van Devanter, which made up the apparently confiscatory returns, contained these further errors:

First: $74,260.08 was carried into the operating expenses as the four months' proportion of a yearly charge of 4 per cent dividend on preferred stock of a leased line. (Of this amount $12,000 was charged to intrastate business.) (R. 129-131, 134.) This same item was brought into the exhibits here and when the facts were developed Judge Trieber promptly held that it would be a double charge and could not be maintained. (R. 131, 132.) Thereafter the appellees filed exhibit 28, eliminating it. (R. 2125.)

Second: Various items aggregating $18,788.17 were erroneously included therein. These were items of "Interest on bonds and notes in the treasury"; "Interest on bank

accounts"; "Interest on advances"; "Interest on sinking funds"; and "Dividends on Stock." All of these were stricken out of the statistics for the present case. There were overlooked items aggregating practically the same amount presented in the exhibits. (R. 136, 137.)

Third: There was an item of interest of $391,919.03 included as expenses in the statistics presented to Judge Van Devanter. This item was not brought forward in the statistics here. (R. 141.)

Fourth: There were also errors of $48,399.20 designated "mathematical errors." These largely consisted in putting in items of expense which were incurred in Missouri, Kansas and Oklahoma. (R. 146.)

Thus in the statistics presented to Judge Van Devanter there were items now admitted to be errors amounting to $533,365.41. These errors are in addition to those developed in the testimony herein, which are shown in exhibits "V," "W," and "X" and brought forward into exhibit "Y." The errors in these exhibits alone, as heretofore shown, raise the rate of return on the whole business in the state from 4½ per cent to 6.51 per cent. In view of the preliminary injunction having been granted on statistics now admitted to be erroneous to the extent of over one-half million dollars, certainly it should be dissolved unless in lieu of the showing then presented is offered substantial evidence clearly and decisively proving that the rates at that time were producing a confiscatory return on the property.

The appellees' brief, continuing on page 3, states that the counsel for the appellants says that the case should be dismissed and liability on the injunction bond enforced for overcharges during the time the injunction was in force, on the ground that it was improperly issued, notwithstanding the court had correctly found that the rates were illegal and could not be enforced. Such is not the position of the counsel for the appellants; almost exactly the contrary was stated at page 68 of the appellants' brief.

It is there stated: "The primary question here is whether the preliminary injunction should have been granted in 1908." And later it is stated: "It is true that should the Court find that the injunction was improperly issued at the time, but that later a changed condition of affairs showed confiscation where there had theretofore been compensation the plaintiff would be entitled to an injunction against the rates from such time as the change occurred, but that principle is academic here because the actual return for the year 1913 as shown both by the Railroad Company's Exhibit No.

61 and the State's Exhibits "AA" and "BB" is larger than for 1907.

"This is true even if the diminution tables are applied and the revenue reduced to a level of the State rates applied to the traffic of 1913. (R. p. 753.)"

The issue is simply whether the rates were confiscatory when the preliminary injunction was granted. If they were not confiscatory then, did they become so at any later period? If it is now clearly and decisively proved that they were confiscatory when the preliminary injunction was granted, it should be made perpetual. If it is not so proved, then it should be dissolved. Should the testimony show that at some later period these rates had become confiscatory, then from such later period the appellees would be entitled to have a perpetual injunction and the decree framed accordingly. Such is the thought in Louisville vs. Cumberland Telegraph & Telephone Co., 225 U. S., 430. But there is no changed situation here. No confiscation is shown for any period except through the Formula, and it shows it for all the periods. This Formula is so framed and devised, with its accumulation of excessive terminal charges, which produce 15.43 per cent extra cost for intrastate passenger and 319.58 per cent extra cost for intra state freight, that no schedule of rates could be compensatory under results shown through it.

The statistics are collected on page 47 of the appellants' brief wherein it is shown that the state freight revenue per ton per mile is 24.79 mills while the interstate revenue per ton per mile is 7.76 mills, and yet this Formula produces a deficit of intrastate freight of $9308.59, and a return on the property devoted to interstate freight of 5.61 per cent (which would be largely increased by the correction of the errors as shown in exhibits "V," "W" and "X").

The question naturally occurs, if this Formula is correct, how high state rates could be made in order to show a compensatory return. It is admitted throughout the case that the cost per ton mile for line expenses is the same state and interstate, and the cost per ton for terminal expenses is the same state and interstate. Necessarily then, the only difference in the state and interstate expense would be the extra terminal of the state, and that is shown to be under this Formula 31 cents per ton. The railroad's voluntary rates for interstate freight produce a revenue of 7.79 mills per ton mile, and such revenue produces a good return on the property and one terminal expense of 31 cents attaches to a material portion of that traffic, and yet the state rates producing 24.79 mills per ton through the operation of this Formula produce a deficit instead of a return.

It is stated on page 10 in the appellees' brief: "The division between line and terminal expense is largely the basis of the entire plan of apportionment contained in the formula in this case." "Aye, there's the rub." Continuing it is stated: "Notwithstanding the fact that the line and terminal service is the most natural and obvious line of primary or fundamental division of operating expenses as between the different classes of traffic, it has never been used as an underlying factor in any division heretofore attempted, so far as we are advised." A monumental service rendered to the public and to the railroads has been the classification of accounts of the railroads by the Interstate Commerce Commission. The Commission has been working on this subject for many years, and has been perfecting the system year by year. While the system was forced on reluctant railroads, yet after it became operative they saw its benefits, as well as the public, and the Commission has had the aid of the brightest railroad accountants in the country in improving the classification of railroad accounts.

The expenses of railroads are divided into five primary accounts, and these are subdivided into 116. (Ex. 8, page 1991 is arranged on them.) Since these Exhibits were prepared, the Commission has refined the accounts still further and added quite a number of additional classifications. The Commission holds many investigations for the purpose of proper accounting, and in these investigations all interested parties are heard, and the best results are obtained after investigating and hearing. A notable instance of this has been heretofore referred to, and that was the protracted investigation and hearing of the Commission on the subject of the proper factor to divide the common expenses between passenger and freight. It is truly stated that this is the first instance where expenses are divided between line and terminal. It must be mortifying to the Interstate Commerce Commission to find that it has for years overlooked "the most natural and obvious line of primary or fundamental division of operating expenses as between the different classes of traffic." It is passingly strange that the appellee Railroad Company has not enlightened the Interstate Commerce Commission upon this subject when it recently had cases before it where this formula for dividing expenses between passenger and freight and state and interstate would have completely answered all questions at issue. The Corporation Commission of Oklahoma, the Railroad Commission of Ar-

kansas, and the Public Service Commission of Missouri, filed a petition before the Interstate Commerce Commission against the Frisco Railroad, Santa Fe, Rock Island, and other railroads operating in Arkansas, Missouri and Oklahoma, seeking to have declared unreasonable and discriminatory the three cent per mile interstate passenger rate prevailing in spots in those states. The case came to hearing on May 14, 1914, and was decided July 18, 1914. It is reported as Corporation Commission of Oklahoma et al. vs. Atchison, Topeka & Santa Fe R. R. Co. et al., 31 I. C. C. Rep. 532. The formula is not mentioned, but Commissioner Clements stated that some of the carriers had made adjustments of pending injunction suits, and witnesses testified for these railroads that it was the intention of the cariers to further contest the intra-state passenger fares prescribed in Kansas, Missouri, Arkansas, and Oklahoma, and "that active efforts are now being put forth to obtain statistics to be used in further litigation." (See page 535.)

Mr. Hamilton and Mr. Nay testified that this formula was produced in the fall of 1913, that the committee went to work upon it immediately after the decision of this court in the State Rate Cases. Mr. Hamilton testified that his road gathered the statistics concurrently of the months his road gathered the statistics concurrently for Arkansas and Oklahoma of the months of November and December, 1913. (R. pp. 70, 71, 76 and 114.) Mr. Nay stated that his road, the Rock Island, gathered their statistics in September and October of 1913, as their cause in Oklahoma was set for hearing on the first of January, 1914, but it was continued, and they completed their statistics for November and December, 1913, making a four months period and that the gathering of these statistics for the Oklahoma case cost between $75,000 and $100,000. (R. pp. 323, 328, 329). Thus it is seen that this formula, which its proponents claim divides all expenses between freight and passenger, state and interstate, in the minutest detail, had been prepared fully six months before said case was submitted to the Interstate Commerce Commission, and the statistics gathered in compliance therewith, which would show the result of the application of the formula, had been completed over four months before this cause was submitted to the Interstate Commerce Commission. Instead of presenting the formula and this minute detail of expenses, the witnesses for the railroads stated that they were gathering statistics for further litigation over these State rates.

One possible explanation is this: The carriers were then seeking to sustain an interstate rate, and had they shown to

the Interstate Commerce Commission that the intrastate passenger service cost 15.43 per cent in excess of the interstate passenger service (Exhibit 17, R. p. 2022), and the Interstate Commerce Commission been in possession of the fact that the intra state passenger traffic was this much more expensive than the interstate passenger service, doubtless a calculation would have been made in charging the intrastate traffic with this excess cost, and the expense of the interstate traffic computed separately from it, which would have materially increased the net earnings of the interstate. As this same exhibit (17) works out 319.58 per cent extra cost of intrastate freight over interstate freight, should the results under this formula be presented to the Interstate Commerce Commission on a hearing of reasonable interstate freight rates, it would hesitate quite a bit before increasing interstate freight rates until a proper level of state rates was made, so that the state freight traffic would bear its just share of the burden.

In a later case before the Interstate Commerce Commission, reported as the Western Passenger Fares case, 37 I. C. C. 1, this road with others convinced the Commission "that the business done by passenger train service is less profitable on the whole than is the freight service in this territory." (See page 33.) Had the results worked out through this formula, been before the Interstate Commerce Commission in that case, showing that the interstate freight made a return of 5.61 per cent and interstate passenger 7.05 per cent, it would have been somewhat embarrassing to the contentions then made by the railroad company. These reasons may, or may not, explain why this formula has not been presented to the Interstate Commerce Commission by the road now before this court in cases where it was pertinent and where it purported to separate freight and passenger, state and interstate, in the minutest detail. It is significant that that Commission charged with the duty to see that proper railroad accounting is made has not yet been enlightened as to "the most natural and obvious line of primary or fundamental division of operating expenses as between the different classes of traffic."

It is true that in the Western Passenger Fares case, 37 I. C. C. 1, this railroad and the other railroads interested in the Arkansas and Oklahoma litigation did present to the Commission the engine ton mile as a proper factor to divide common expenses between freight and passenger traffic, and it will be noticed in reading that case that some of the learned counsel who participated in the formation of the formula were counsel for the railroads in that case. But

they failed to convince the Commission that the engine ton mile was the proper factor. In fact, the Commission said it was not. It is true that line and terminal is the basic principle of this formula. It is the threshold of the edifice, and upon that threshold one must stumble. It is an artificial distinction, one not utilized in railroad accounting, one not susceptible of application to operating conditions and one not recognized in daily practice. The sanhedrim of the litigating railroads who originated this formula attempted to do the impossible, to separate all expenses into divisions to which they did not naturally belong. It has drawn lines where no lines exist. It has made distinctions where there were no differences. It has created demarkations when there are none.

It is stated at page 10 of the appellees' brief that the nearest approach to this plan was that of the State in the Arkansas rate case, Allen vs. St. L. I. M. & S., 230 U. S., 553.

Mr. Hamilton testified that the Arkansas plan was the background of this. (R. p. 74.) The one who presented that plan to the trial court and defended it there and in this court most earnestly protests an allegation of similitude. The few good things in this formula are taken from that one, and these were factors vigorously criticised in every detail by Mr. Nay, who now so earnestly supports this one.

The division of freight expenses, first between local and through trains, and then the division of state and interstate expenses of those trains by the ton miles, was clearly taken from the state's plan in the Iron Mountain case, as it is approximately followed in this formula. The apportionment of superintendence and general expenses on the basis of the located charges under those accounts was also taken from the Arkansas plan, but in this formula it is not only correctly applied, but incorrectly applied to many items to which it is inapplicable. The division of passenger trains on a space basis between mail, express, baggage, coach and Pullman was adopted in a way in this formula, but herein is confused and made unreasonably burdensome to the state traffic in ways that will be hereafter pointed out. There was no attempt in the formula in the Iron Mountain case to make any distinction between line and terminal. The attempt of that formula was to directly allocate all expenses to state or interstate where that was possible, and where impossible to group kindred expenses and divide them upon the factor applicable to that class, directly reaching to the division between state and interstate. For instance, all yard and terminal expenses were thrown into one class. They were the expenses of division points and where switch engines were

maintained and these yard and terminal expenses were divided between the state and interstate on the number of cars in and out of the yards and terminals, thus directly and accurately locating to each class of traffic the expenses of the service rendered to each. Had the railroads here spent some money in gathering this data, and they say that they spent much money in gathering statistics for this formula, they would have had an accurate division so far as it went between the state and interstate in this great item of expense.

In lieu of that, under this Formula, the making up and breaking up of trains in division yards, is classified as line expense and the line expense is divided between state and interstate on the respective ton miles of each. As the intrastate freight haul was only 25 miles in 1907 and in 1913 (Ex. 39, R. page 2143), the state traffic obtains little, if any service in these division yards, as they are usually 100 miles apart. If the Arkansas plan had been followed these expenses would have been apportioned directly to the cars, state or interstate, which obtained the service, and incurred this expense. The Arkansas formula divided Maintenance of Way expenses on the freight side on the car mile basis, making a proper allowance for the additional use of the local trains, and of the heavier weight of the locomotive. It was developed therein, that the car mile was the basis of contracts between railroads where one used the road of the other for their relative proportion of Maintenance of Way expenses. In fact, there was an existing contract between the two railroads then before the court (Iron Mountain and St. L. Southwestern), for the maintenance of a track of 100 or more miles in length on the car mile basis. It was shown that this was the factor commonly used in contracts of that sort. As that factor was adopted between railroads in contracts between themselves for the Maintenance of Way expenses it was thought that would be the proper basis to use in a rate suit, but such use was criticised by Mr. Nay and the railroad witnesses, and when the formula was adopted here it was conspicuous by its absence, and in lieu of it the Maintenance of Way expenses are divided between passenger and freight on the engine ton mile basis and the property of the Way is divided on the Transportation expenses.

It is true that the Arkansas formula was crude. It did not attempt to go into all of the questions which are solved to the satisfaction of the railroads in the present formula. It began the work after the assignments to the State, and after the separation between freight and passenger. It was commented upon by Mr. Justice Hughes in that case, but as the lower court had discarded the test months and substi-

tuted various bases not sustained by the evidence, to make calculations of important divisions, the result of the court's plan, which was in part based on the Arkansas formula, was necessarily discredited.

As the appellees are seeking to bolster up this formula, through the testimony of Mr. Nay and Mr. Hamilton, and the statements of their learned counsel by the Arkansas formula, it has been thought well to call attention to some of the radical differences between them. It may be a prejudiced criticism, but yet it is a candid one, to say that the few good things in this formula are taken from that one, but the basic principles of that one are conspicuous by their absence from this one, and the basic principles of this one are not to be found in that one.

As counsel for the appellees has broadly stated and correctly stated that the division between line and terminal expenses is largely the basis of the Formula, your attention is called to some of the obvious errors, to put it mildly, of the application of this division.

Use of Overhead Basis.

It is a sound principle of accounting that expenses of superintendence or executive, or overhead expenses as they are generally called, should be distributed on the basis of the expenses actually located. For instance, a superintendent of three separate departments should have his salary divided on the basis of the expense of those three departments. It is assumed that the expenses will measure the time and service he gives to each of these departments. This principle is applied in this formula, and was taken from the Arkansas formula, and the soundness is not questioned, but in applying it in this formula they carried it to an excess. It seems that wherever a factor cannot be found that is suitable, that that expense is divided upon some other expense without any relation one to the other. For instance, take accounts 101, 102 and 103, Damage to Property, Damage to Stock, and Injury to Persons, respectively between line and terminal (Formula page 16), and between freight and passenger (Formula page 20), and terminal expenses between freight and passenger (Formula page 23), which are located direct when known, and the balance apportioned on the basis of the located. (Exhibit 8, R. page 1991) gives the apportionment between the line and terminal for the test months of November and December, 1913, by the Interstate Commerce Commission accounts. It is seen therefrom that account 103, Injuries to Persons, is $4347.05 and is apportioned on this basis: $2536.98 to the line and $1710.07 to terminal. In other words, over 40 per cent of the injuries to persons is

assigned to terminal. When it comes to an apportionment of these same items assigned to line freight between intrastate and interstate, they are divided on the basis of the respective gross ton miles (except injuries to persons, which are located as far as possible from the vouchers.) (Formula, page 30.) Mr. Nay, in his testimony in the Iron Mountain case objected to using train mileage as the factor to divide these casualty accounts on the ground that casualties did not occur with regularity—that is with reference to train mileage—and yet, he states the ton mileage division of these expenses in this formula is sound. (R. page 349.) Certainly they do not occur with any more regularity in regard to ton mileage than they do to train mileage.

Coming back, however, to the division of these casualty accounts on the basis of the located claims. Should a person be injured in one of the test months in a waiting room, it would be assigned to terminal. This is an accident that may occur at any time, and may not occur for many years, yet the happening of this accident in a test period fixes this expense according to the place where it occurred, between line and terminal, and that test period is used to equate the relative expenses between state and interstate back to 1907, and those expenses largely hinge upon the relative amount of terminal expenses as the state is charged with two terminals as against one for the interstate. This equation carries the assumption that the same number of people were injured in terminal service in 1907 that were injured in terminal service in the two months of 1913, and does not stop with that, but becomes the basis to divide all of the unlocated items between line and terminal, freight and passenger, etc. Suppose, for instance, this $4,000 which is being divided in the test months, 10 per cent of it was actually located either in line or terminal then that 10 per cent is used as the basis of taking care of the other 90 per cent of the accidents. To use the language of Mr. Justice Holmes, this is setting down every figure "with delusive exactness." (City Louisville vs. Cumberland Tel. & Tel. Co., 225 U. S., 430.) This error is just begun when the unlocated accidents are divided on the basis of the located ones, because when thus divided they become the basis for further division, superintendence of that department, general expenses, and are time and again used for the division of other unlocated expenses.

Mr. Nay admits in his testimony which is quoted at page 10 of the brief, that there are some expenses like general expenses, which are not in direct relation with either terminal or line, and their apportionment between line and terminal is made under the provision of the formula. The formula

provides for these to be apportioned between line and terminal on the basis of all accounts theretofore, 1 to 105. (Formula page 16.)

Turning to Exhibit 8, page 1991, sheet 3, containing the statistics of the test period, which is the basis for the extra costs carried back to 1907 by *nunc pro tunc* proceeding, it is found that these general expenses amount to $20,686.78. They are apportioned, to line $13,138.57, and to terminal $7,548.21. Nearly 40 per cent of the general expenses are assigned to terminal. The state passenger and the state ton of freight is chargeable with two terminal expenses to one for part of the interstate, and to none for part of the interstate (the transtate). The President's salary and expenses of his office, law department, claims department, pensions and other items of general expense, are so apportioned that when they are set on the terminal side of the ledger, state traffic bears at least double the proportion which the interstate traffic bears, according to the workings of this formula. The President sits in his office in New York, attending to the finances of his company, giving attention to its larger affairs, without any thought or attention to such artificial distinctions as line or terminal in the operation of his railroad, but when the formula comes into play, the President's salary is divided between line and terminal on the basis of all of the accounts of the road, and then the state traffic gets a double charge for all that part of it assigned to terminal. None of his work or that of his office force is divided between line and terminal. They render service for the road as a whole, not to it in these parts not recognized in railroad operation, and not set down in railroad accounting. In 99 instances out of 100 it cannot be determined whether the service rendered occurs from a transaction described herein as line or described herein as terminal. It would be impossible to trace it. The President deals with the finances and the general management; the law department deals with the questions of law, policy, and the handling of litigation. Some little of the litigated work might be located to one or the other, but the bulk would be impossible of allocation.

Pensions is an item of general expense. On this road it is pitiably small. They have $411.74, and yet these pensions are divided between line and terminal. The state passenger and state ton of freight will pay more pensions than interstate passenger or interstate ton of freight, because forsooth all expenses must be divided between line and terminal; *reductio ad absurbum.*

Mr. Nay admits in the quotation referred to that these

general expenses are not related either to line or terminal, and he as one of the authors of the formula should have seen that such an attempt was not made, for he must have known that the result of it would have been to unduly burden the state traffic by assigning to terminal, expenses that were not related to that subject. Such unrelated subjects could have been set apart, and apportioned directly to state and interstate on the basis of the overhead, without carrying them through this artificial distinction which operates so disastrously to the state traffic without any reason for it so doing.

The Symons Percentages.

The formula provides for the division of locomotive, freight car, and passenger car repairs, renewals and depreciation to be divided between line and terminal, according to the opinion of an expert. Mr. Symons was that expert. Taking the freight car repairs to illustrate the point. He illustrated his percentages by applying them to 28 cars. The Frisco system has 32,017 cars. (R. page 508.) His conclusion finds expression in these 28 cars, and he admits that the result would be different if applied to 2800 cars, but says it would not affect his opinion as to the contributing causes of the injuries. (R. page 508.) He took a car from four different roads, and distributed the repair bills of them as follows, making the terminal charge on the Frisco 76 per cent, on the M. K. & T. 78 per cent, on the Rock Island 72 per cent, and on the Santa Fe 75 per cent for these particular bills. He did not know the history of any of the injuries. He took the bills for repairs, and applied his formula to them with these results. He could not tell whether those injured from derailments had been injured in line or terminal service. Where injured in collision, he could not tell whether the injury was at a station or on the line. (R. page 512.) He had not worked out any way to ascertain or to get a table that would take care of the place of injury. (R. page 514.) Yet he locates all injuries either to line or terminal.

The formula assigns injuries to freight cars in making up and breaking up trains at division points to line and switching cars in making up and breaking up trains at way stations and junction points to terminal. Mr. Symons admits that the same class of injury occurs, and the object of the movement is the same in each instance; that is, in each case, the train is being made up for further movement in the one instance in a division yard and in another instance at a junction point or way station, where cars are set out or picked up and the train re-made for the purpose of further transportation. The only difference he makes out is that

the train crew is more efficient than the yard crew, and there is not so much rough handling at the way stations and junction points as there is in the yards, but the occasion of each movement, the purpose of it and the character of it is exactly the same, and yet because of the formula, classing one as line and the other as terminal, he so sets down a distinction in his allocation of his expenses to line or terminal accordingly. (R. page 636-640.)

A broken link in making up a train at a division point becomes a line expense, and the state traffic, which rarely goes into the division point, is charged with a mileage proportion of it, yet a similar link similarly broken, while making up a train at a junction point is terminal service, and the expense of it is chargeable to state traffic in the proportion of two to one of the interstate.

Mr. Symons in referring to locomotive repairs stated that all mechanical engineers recognized these as contributing causes of injuries, viz., starting and stopping, getting up steam and making up trains. He states that no one could figure out the proper percentage of either one of them to line or terminal. He says that probably if a corps of experts were to follow one individual engine, they might probable be able to make some estimate on it, but they would not be able to arrive at exact figures for the reason that they do not know when certain injuries occurred to an engine, as a great many of them, and some of the most expensive ones, are what they call hidden defects. That is they are not visible to the eye. For instance, a locomotive comes in for repairs or general overhauling, and it is found after it comes into the shop that a driving wheel is cracked, or a driving box is broken at some point where it could not have been seen on inspection, or that a cylinder or cylinder saddle is defective in a way that it is not shown in service. No one could say whether it happened at the station, in switching cars over a hill or while running along at maximum speed between stations. It might occur almost anywhere, or it might be the result of a combination of strains, which the part underwent in these various services, and which could not be sub-divided and separated.

In the face of this candid and fair explanation of how injuries occur, yet this pseudo scientist locates every item of expense either to line or terminal, and makes out a percentage of 65 per cent for freight terminal repairs. He admitted that the Wellington tables properly classified the contributing causes of injuries to cars. These were six, viz., (1) depreciation, (2) starting and stopping, (3) switching, (4) curvature, (5) grades, (6) distance. (See appellants'

brief, page 55.) He recognized each of these as well known contributing causes for these injuries. He gave no other causes than these established ones. He refused to estimate the line or terminal proportion of any one of these contributing causes. These are the six causes of all injuries, and he has taken cognizance of each, and divided the whole into two parts, but is unable to give the two parts of any one of the six causes, making up the whole.

This division of equipment repairs between line and terminal is radically and inherently wrong, because impossible. Ex. 8, page 1991, shows the equipment repairs of these three items amount to $107,470.73, out of a total expense of $544,378.83. In other words, over 20 per cent of the total expense of the test period upon which all of this extra expense of state traffic is worked out is affected by Symons' division between line and terminal, and indirectly much more is affected by it. For instance, account 46, shop machinery and tools, is divided on this basis, and part of account 16, shop building and store houses, is also divided upon it. A search of various bases in the formula will doubtless find where it was repeated elsewhere, as a part of located expenses upon which unlocated items are divided. But these are sufficient to illustrate the materiality of Symons' percentages. It is a case of arithmetical progression of error in assignments of terminal expenses, resulting from which the state traffic bears a two-fold burden and the so-called extra expense of state traffic over interstate runs up quickly under such formula.

Take a broken axle on a locomotive that is not discovered until it gets into the shop, and divide the expense of repairing that axle between line and terminal, when no man knows where it occurred, how it ocurred, or the cause thereof; or take a number of freight cars wrecked by a derailment or collision. They go into the shop, and are repaired. Symons has made no record and has no information as to whether the accidents occurred in line or terminal. Of course, such instances as that could be followed up and ascertained. In this case, it has not been done. He has taken no account of the place of the injury or particular service in which it was received, but has followed his general observation, experience and judgment, and decided that 65 per cent of these freight car repairs occur in terminal service. He says that 80 per cent of the injuries to freight cars is due to rough handling in yards, and yet the principal injuries in yards is due to making up and breaking up trains, which is classified as line service. His whole testimony is a bundle of impossibilities and contradictions. He was attempting to do the impossible, and instead of frankly stating that it

could not be done, as he did in the instances referred to, tried to justify what he had done by explaining that which could not be explained. It is earnestly requested that you read his testimony in full, and not accept any abstract of it, but read it as given, and determine whether he is scientist or charlatan.

It developes in his testimony as heretofore set out (B. page 52-56) that his percentages are at war with Wellington and Webb, writers on this subject, and Berry, who prepared a paper on it which was read before a body of engineers. But be that as it may, Symons' testimony falls of its own weight and needs no refutation. It, at best, is the same class of testimony which was condemned in the Minnesota, Missouri and Arkansas Rate Cases, of the eminent railroad officials who testified to the alleged extra cost of intrastate. This is extra cost of terminal as compared with line, indirectly attaching to and creating the extra cost of intrastate.

Arbitrary Divisions Between Line and Terminal.

The formula, page 12, in dividing between line and terminal, account 16 provides for the maintenance of general offices, reading rooms, and eating houses to be divided half and half, and also that account 14, maintenance of telegraph and telephone lines be divided half and half.

Referring to the division of telegraph and telephone lines, Mr. Hamilton said that it was impossible to apportion them and that this arbitrary division was made. (R. page 238.) In fact, line and terminal expenses, as defined in this formula are not applicable to any of said items, except telegraph and telephone, which is from its nature largely a line expense. The maintenance of eating houses while not line expense within the definition of the formula is more analogous thereto than to terminal. The eating houses are for the benefit of travelers on the train, and not those arriving and departing at stations where the eating houses are situated. These are the passengers for whom this necessity does not exist. The state passenger is charged more than double his share of the half of eating house expense charged to terminal. Exhibit 6, page 1979, shows the intrastate passengers to be 217,909, the interstate 148,978 and the transtate 8,140. These transtate passengers (the long haul) are the ones who would naturally get most benefit out of eating houses, yet no terminal expenses would attach to them, and they would have a free lunch, so to speak. The interstate passengers of 148,978, would have one terminal expense attached to each, while the intrastate of 217,909 would have two attached to each.

Exhibit 39 shows the average journey of the intrastate passenger in 1907 was 18.84 miles, and in the test period 19.06 miles, while the average haul of the interstate for the same periods in Arkansas was, for 1907, 42.59 and in 1913 39.89, and it must be remembered that this is only the interstate haul in Arkansas. This interstate haul is a segment of the longer haul, and only represents so much of the interstate journey as occurs in Arkansas. (R. page 872-874.) The half of the eating house expenses charged to line would be divided between the state and interstate passengers on the respective passenger miles. As the state passenger only travels 19 miles he gets little if any benefit out of the eating house. It is the same proposition in another form, where state tons are charged with yard expenses in division points, as Exhibit 39 shows that the state freight averages 25 miles. In charging the expense of maintaining in the one instance the eating house and in the other instance a division yard, for which no service except in rare instances is rendered to the intrastate, injustice is done to the intrastate in line expenses. The general offices, like the General expenses, are not related either to line or terminal, but are here split in half, between line and terminal, and unequal proportions of the terminal part falls upon the state and the interstate. In Exhibit 8, page 1991, is given the salaries and expenses of general offices as $1794.49, divided, to the line proportion $1194.19, and to the terminal of $600.30, and the salaries and expenses of the clerks and attendants as $7857.30 divided to the line $5118.73 and to the terminal $2738.50. In other words, to maintain the buildings, housing the general officers, clerks and attendants, is assigned 50 per cent to the terminal, yet the salaries of these officers and employees using the buildings are assigned approximately 35 per cent to terminal. Even this assignment to terminal is too high, and results from the excessive terminal charges in the Symons percentages, and other like matters which is the subject of this discussion.

Account 14 is for the maintenance of the telegraph and telephone lines for the two months making the test, and Exhibit 8, page 1991, shows that the amount of this is $898.88, one-half assigned each to line and terminal. Account 94 is the expenses of operating telegraph and telephone lines and is the amount paid employees for conducting telegraph and telephone operation. This account is divided between line and terminal on the basis of all operating accounts, and results in charging $974.76 to line and $474.69 to terminal. This alone proves how arbitrary is this charge of 50 per cent terminal: the operation of these lines cost the terminal side one-half

what it does the line side, and that is too much for the reasons just stated, because the other local expenses are already excessively charged to terminal proportions. These are just other instances of the arithmetical progression of error, and while these particular accounts are small, yet their division between line and terminal furnish the basis of many other larger items, and in those the error grows larger.

Assignment of Tracks.

Exhibit eight, page 1991, under accounts 2 to 10, Maintenance of Way Expenses, shows that the amount for the two test months was $114,143.07. All of this was assigned to line except $5,223.50, which was assigned to terminal. This amount is relatively small, but is a considerable sum of itself, and the basis for it is well worth looking into.

In the formula, at page 12, the tracks are divided into classes a, b, c, d, and e.

(a) Are the main line and passing tracks and are assigned to line.

(b) Are the station tracks and are assigned to terminal, and the freight side thereof.

(c) Are the yard tracks, classification and storage tracks and are assigned to line. These are the tracks upon which the trains are made up and broken up and their classification to line is elsewhere discussed. It operates unfairly to the state by having the state traffic bear part of the expense of the service for which it rarely obtains a benefit. These tracks and the expense incurred in maintaining them and the corresponding expense in Transportation for the switching crews operating upon them and the expense in Maintenance of Equipment used upon them ought not to be treated as either line or terminal. These expenses ought to be treated, in order to fairly divide them between state and interstate, as was done in the Iron Mountain Case by the state, wherein they were segregated with other like expenses of yards, and divided between state and interstate in proportion to the cars of each which used these facilities and incurred these expenses, and suffered the injuries therein.

(d) Are the shop, store house, and repair tracks, and they are divided on a basis of the repair charges; and again the Symons percentages swell the terminal expenses attaching to their maintenance. Why the maintenance of these tracks should be divided upon the basis of injury to cars that may occur upon them is a proposition that others may be able to understand.

(e) Are engine house tracks, turn tables, wyes, fuel and water tracks, and these are distributed on accounts 72

and 81, which are in turn distributed on time studies and engines handled, and therefore some of it will go to terminal, although the uses to which these tracks are put do not in any way fall within the definition of terminal within the formula. In truth, general utility tracks, such as these, are not susceptible of division between line and terminal. They serve all ends of transportation alike.

Incongruities in Superintendence Expenses of Terminals.

There is one sound principle at least in the formula (borrowed from the Arkansas case), which is apportioning superintendence in proportion to direct charges for which the superintendence is directed. This principle is uniformly applied in this formula not only where it should be, but in many instances where it should not be. It works out a bundle of incongruities here. Exhibit 8, page 1991, giving the apportionment for two months in 1913, shows these results of superintendence: In Maintenance of Way the total is $7830.76, all of which except $566.16 is assigned to line; the terminal expense of Maintenance of Way for superintendence costing about 7 per cent. Under Maintenance of Equipment the amount is $3255.18, and divided practically even between line and terminal. Under Transportation, the expenses are $8159.85, of which $5276.97 is assigned to line and $2882.88 to terminal or about 35 per cent to terminal. The Symons percentages of excessive charges in equipment to terminal and the time studies in the Transportation accounts are undoubtedly the causes of raising the terminal expense of Transportation to 35 per cent and of Equipment to 50 per cent, while Maintenance of Way is only 7 per cent terminal.

Accounts Impossible of Division Between Line and Terminal.

Taking the Interstate Commerce Commission classification of accounts as found in Exhibit 8 wherein the expenses are divided according to them between line and terminal, and examining them, it will be found that many of them, from their nature are insusceptible of division between line and terminal. First in order are accounts 1 to 23 for the Maintenance of Way and Structures. Some of these accounts, like telephone and telegraph lines, eating houses, and stores are confessedly incapable of division and arbitrarily apportioned 50 per cent and 50 per cent. The big items of ballast, ties, rails, etc., are dependent upon the correct location of the tracks to line and terminal. The allocation of these expenses are automatic as the formula pre-

scribes what tracks are line and what are terminal. Hence to determine the correctness of the apportionment the assignment of tracks to line and terminal must be considered. Mr. Nay admits that the tracks are constantly used in other services than that designated in the formula, but claims that the other use of them is either nominal or the use of some other track for the other purposes will offset the use of them for the given purpose. These are his "general impressions." (R. page 348-350.) He admits, however, constant use of the main track at the station for switching purposes, whereas it is all designated line. If the passing tracks and main tracks are used, as unquestionably they are, at times, for switching and other terminal service, undoubtedly the allocation of all expense of their maintenance to the line side is to the extent of the other use, erroneous. The accountants who prepared this formula in order to have been accurate must have had knowledge of all railroad operations and set down the same correctly in the formula. These are operating, not accounting, usages. But passing the division of the physical structures and taking the items of expense that are not dependent upon the physical nature of the facility. The next items are the Maintenance of Equipment accounts, and as heretofore shown the big items are locomotives and car repairs, renewals and depreciation, which constitute about one-fifth of the total expense of the road. They are from their nature and from the inability to discover the cause and location of the injuries insusceptible of being assigned to line or terminal. Injuries to persons may occasionally be located to one or the other, but when done would not be a reliable yard stick with which to measure other accidents. Such items as stationery and printing and "other expenses" are general in their nature and bear no relation to line or terminal. Traffic expenses are totally disconnected with either line or terminal; this is a subject discussed elsewhere.

Station service can be located to line and terminal if a proper record could be made of the time that each employee devoted to each class and if there was any means of definitely determining the service of the employees separately devoted to each class. The method pursued to obtain this division was in time studies, and it is discussed elsewhere.

Yard service is so constructed under this formula by the arbitratory classification of its chief function—making up and breaking up trains—that it is impossible to work out any division of it relating to the real uses of the service as between state and interstate. This is a large item, over $30,000 involved, and on a basis of cars in and out of the yard every

dollar could be located in either interstate or state, as the case may be. This yard service is not either line or terminal within the definition of those terms in the formula, but is arbitrarily nominated line. It is an intermediate service between origin and destination, similar to receiving and delivering freight, but it is a part of the journey between termini. It is service in a different form from the balance of the trip and is served by different forces working under different management from the train movement. The train service, consisting principally of the wages of the train crew, fuel, etc., is a subject of easy allocation between state and interstate, if the class of trains are preserved, and the expense of those trains are divided in the relative proportion to the state and interstate traffic upon them. Instead of this simple division, time studies are worked out and an apportionment between line and terminal based thereupon made and subsequently the division of both line and terminal between state and interstate is ultimately worked out.

The casualty accounts have been elsewhere discussed, and the inapplicability of this division to them is self-evident. As it is admitted by Mr. Nay that the General expenses "are not in direct relation to either line or terminal" it is not necessary to dwell upon that subject further.

TIME STUDIES.

The appellees' brief on page 11 states: "Through a test made in the months of November and December, 1913, in complying with the provision of the formula, definite information was obtained in regard to a matter which has given rise heretofore to much opinion and speculative evidence in regard to the increased expense of transporting intrastate over interstate traffic, growing out of the long and short haul incident to the two classes of traffic." This "definite information" of the so-called increased cost of the intrastate expense depends upon the accuracy of all of the factors used in this formula. Counsel speak of the result worked out under this formula as if it were definite and free of opinion and speculative evidence, yet this formula requires more opinion and speculative evidence to sustain it than the plan pursued by the railroads in the preceding rate cases. In the former cases they had two fundamental theories to establish by opinion and speculative evidence, the revenue theory, and the extra cost theory, while

this formula must be sustained on opinion and speculative evidence in each of the particulars heretofore enumerated on pages 59 and 60 of appellants' brief. The statistics gathered afford no solution of the problem of extra cost, if there is any, of state over interstate, unless all the bases directly reflect the use of the property or service performed. The "definite information" of the so-called increased extra cost of the intrastate is not based on the statistics gathered, but on the value of the many bases of applying those statistics in different ways. Hardly any figures gathered by the railroads after all their enormous expense to gather statistics to sustain this formula reach directly to the alleged extra cost of intrastate or the relation of the state to the interstate. In the main they are statisics of local or through trains, showing the time the crew spends on a train in running or stopping at a water station or way station or the time that the employees in a station devote to the passenger, express or freight service or the time in the yard which the switch engine or crew devotes in making up or breaking up trains or other operating service, and the consists of the trains. Much useful data is given and much useless data is given. Instead of using what is gathered directly and simply, it is attempted to be worked out through this formula in multitudinous ways. In the case of Gast Realty & Investment Company vs. Schneider Granite Company, decided by this court on January 31, 1916, Mr. Justice Holmes, speaking for the court, gave a description of this formula without then intending to apply it to the formula. He was referring to an ordinance of the city of St. Louis and described it as "a farrago of irrational irregularities throughout." It is thought that the English language is not capable of affording a more accurate definition of this formula than the one herein quoted.

The use of all these statistics is dependent upon the value of some theoretical base. For instance, much information has been gathered from the yards and stations, as to the relative service rendered passenger or freight. But all of these statistics go into the waste basket because the formula uses the engine ton mile to divide the common expenses between freight and passenger, the largest item, which is the subject of division, between these classes of traffic. This basis is proved to be so wide of the mark that necessarily the ultimate assignments between freight and passenger become valueless. The line proportion of maintenance of way, which is divided between freight and passenger, is $128,-319.78, nearly one-fourth of the total expense of the period. (Exhibit 8, page 1991.) Much useful data was gathered in

shops, and on trains relating to the maintenance of equipment, but it is rendered useless by the excessive proportion of the equipment charges assigned to terminal by Symons and the indirect effect of that in other places where they are applied, whatever valuable data may be obtained is lost by it being merged with bases which cannot be sustained. Fully one-fourth of the total expenses are influenced by the Symons percentages. The arbitrary division of all expenses into line and terminal carrying into terminal many items not applicable thereto and in other instances making palpably excessive terminal charges such as 50 per cent maintenance of general offices, telegraph and telephone lines and eating houses, and the Symons percentages, etc., create an impasse for line and terminal as presented here. There is another phase of the line and terminal division as well as the freight and passenger division and the resultant effect on state and interstate which has only been referred to incidentally in the appellants' first brief, which is much stressed in the appellees' brief, and that is the TIME STUDY.

The "definite information" which counsel claims has been obtained of the so-called increased expense is dependent on the truth and accuracy of the numerous time studies as well as the other factors heretofore discussed. Appellees' brief, pages 12 to 16, explains the time studies and Exhibit 2, which is interestingly summarized in the appendix of appellees' brief, pages 202 to 208, gives the railroad version of it in full. Trainmen made out reports of their runs, giving the starting and leaving time, and the time for all stops, and the time devoted to different services at the stops. Switch-engine foremen made out reports of the services of the switch engines in the yards, and towermen of the passing trains under their towers, and the station agents divided up their own time and that of all employees in the station into the various departments of work therein.

Account 16, Maintenance of Buildings, Fixtures and Grounds, except that part guessed off half and half, is divided on the time basis study. The maintenance of station employees is divided on time study basis resulting in the two test months, in assigning $34,416.56 to terminal and $7,008.61 to line. (Exhibit 8, page 1991.) The yard service of over $30,000 is divided on a time study basis, resulting in almost half being assigned to terminal. Road engine service and train service of about $140,000 is divided on the time study basis. Almost half of the total expenses of the test months is divided on some of the time studies. The blank forms which were given the employees to fill out constituting these time studies are found in Exhibit 2a-2k. The most

far-reaching of these is Exhibit 2h, the report of train stops and terminal delays.

The conductor and train clerk are required to report the leaving and arriving time of the train, name of station stopped at, hour and minute of arriving and departing, time of stop on account of train operation, the balance of stop or station service, and terminal delays, due to switching and other causes. Mr. Hamilton explains fully the method of making these reports. (R. page 120 and 125.) Take a concrete example of these stops on the Frisco road in Arkansas. A through passenger train going north up Boston Mountain will stop at Chester for the purpose of getting a helper engine, and to get orders, these will be classed as train operations, and also to take on passengers, which will be a terminal operation, and to take on mail and express. This report gives no time for mail or express. The next stop is Winslow, where the helper engine is dropped, and train orders obtained, each of these will be classed as train operation. This is quite a summer resort, and during that season there will be many passengers and much baggage to leave the train. This is also in the fruit be't, and in season there will be much express, and at all these stations there will be mail taken on and off. The conductor and the train clerk must accurately divide the time of these stops in such a way that his report makes the basis for a division between line and terminal. Shortly after that train entered the State, it reached Fort Smith and there stopped ten minutes. This ten minutes was used to change engines, put on a diner, and at certain seasons of the year an extra Pullman, and to receive train orders, deliver express, mail and baggage, and to discharge and receive passengers, mail and express and baggage. These ten minutes must be divided by the conductor and train clerk some way, some how, between these services so that the proper basis of division between line and terminal is made.

Take the freight side of the problem. The through freight trains run through from division point to division point with few stops, except for water and fuel, and train orders, but occasionally they do set out or pick up cars. The difficulty of the conductor and train clerk will be minimized on those trains. The local train, however, runs from division point to division point, and makes stops at every station. Whether there is any freight to receive or take off or not, it must stop there upon the principle of readiness to serve, or it may be in the hope of business. While at a local station orders will be obtained in many instances, water and coal supplied, freight of all kind put on and taken off,

switching of all kind done in the setting out and picking up of cars; and the freight conductor and clerk have the apportionment of this time to make out so as to work out line and terminal performance. In many instances, in eastern and southern Arkansas particularly, the local train will pick up cotton at the way station and carry it to the nearest compress station, and deliver it to the compress, and it will be compressed, and later shipped out in compressed form, but the cotton will be billed from the way station to Boston as an interstate shipment. There would be four terminals on this cotton. And in many instances the same process is carried on with lumber where it is picked up on spur tracks and saw mills, as logs, and carried to a town where there is a mill, turned into lumber, and shipped without the state with three or four terminal services. In many instances passenger cars in the fruit belt of Arkansas stop at the sidings and stations for the purpose of taking on fruit carried by express. How the conductor and train clerk were to divide this between line and terminal is not explained in the evidence.

All of these movements herein referred to are explained more or less definitely in the testimony, and these are merely taken as illustrative instances showing the duties placed before the conductor and the clerk in making out their report, which become a basis of this division between line and terminal.

Exhibit "2I" is the form report of the switch engine foreman. His time is divided up into half hour periods and those half hours he must set down as engaged in making up and breaking up trains, handling cars for icing, handling cars for loading and unloading, switching cars to and from connecting lines, handling cars without switching limits, or unloading within switching limits, handling cars to and from rip tracks, and of passenger switching, and of dead time. This can be done. Whether these switchmen did it accurately at the time or guessed off their reports at night or at the end of the month, there is nothing in the evidence to determine. If the switch foreman had time to set down each of these movements, half hourly, the proportion charged to "dead time" would be great.

The towerman's report is simpler and unimportant to this case. It is Exhibit "2J." The station agent's report is "2K" and he is required to divide the wages of every one in the station from himself to the janitor, between freight, express, mail and telegraph service.

Mr. Hamilton was questioned about the compilation of these reports, particularizing as to Big Jim, a useful negro at Mansfield, who was engaged there in the station in han-

dling mail, express, freight and baggage, and in doing all kinds of work around the station, and he stated that Big Jim's time was divided up by the agent in one of these reports into the various classes of service as therein shown. (R. page 120-125.) The state accountants were given an opportunity to examine this vast multitude of reports in the company's office, but it was not thought it was worth while to examine these individual reports as the State assumed that the railroad company had correctly summarized the result of the reports on file. No train conductor, no train clerk, no station agent, no switch engine foreman and no towerman was called to substantiate his report or explain how it was made or the accuracy with which he did it. The only testimony on the subject was Mr. Hamilton's expressed confidence that these employees had properly made out the reports according to instructions.

These are not like reports that employees make in the due course of their employment accounting for every act performed by them, but reports made purely for the purpose of litigation and not for train operation, station duties or switch engine duties. The summary of these reports compiled by the railroad as their time studies is a mathematical epitome of hearsay evidence. Upon these unverified and unsupported reports made by hundreds of employees, many of them required to solve perplexing problems in the making of reports, about half of these expenses are to be divided. Do such reports constitute the "definite and convincing proof" which this court declared it was encumbent upon the railroad in order to establish the invalidating facts in attacking State made rates? This is not information called for by the court in the case quoted from, Allen vs. St. L., I. M. & S., 230 U. S. 553, as these statistics do not bear upon the costs of intrastate traffic as compared with interstate traffic, but they bear a supposed distinction between line and terminal service, and a distinction between freight and passenger service, and also a distinction between mail and express and the passenger service in stations (but not on the road). Then after they are used for the purpose of such divisions, other factors are applied to work out ultimately results between state and interstate.

The Auxiliary Cars.

On page 15 of the appellees' brief it is stated that auxiliary car proportion of expense is divided between intrastate and interstate on the basis of the total number of passengers of both classes carried one mile in passenger trains containing the coach and Pullman passengers, because the auxiliary cars serve both alike. The auxiliary cars are baggage, dining and observation cars. (R. page 84.) Exhibit 13, page

2014, is a division of line passenger expense, mail and express excluded, between coach service, Pullman service and other passenger train cars and between intrastate and interstate traffic. This Exhibit shows that of the passengers riding in Pullmans, 14.68 per cent are state and 85.32 per cent are interstate. Of the passengers riding in coaches 43.46 per cent are state and 56.54 per cent are interstate. The expenses attaching to the transportation in coaches is divided between the state and interstate, on the proportion of the state and interstate in each and the same is true of the expense attaching to transportation in Pullmans. But when the expense of the auxiliary cars are divided between the state and the interstate, the coach and the Pullman are drawn together on the theory as stated in the quoted excerpt that they are used alike by all passengers. That produces a percentage of 40.55 state and 59.45 interstate. Exhibit 39, page 2143, shows the average intrastate passenger journey, in 1907, was 18.84 miles, in 1913 was 19.06 miles, while for the same periods corresponding interstate journey was 42.59 and 39.89, but this interstate journey is only so much of it as is in Arkansas and is a segment of a longer interstate haul. It is apparent that the passenger taking an interstate journey of 19 miles has but little use for a baggage car or an observation car, and none at all for a dining car. Unless the train is exceedingly slow he would not get his bread and butter before his journey would be ended. There is occasionally some service obtained from baggage, dining and observation passengers, even if their journey is only 19 miles, but it is well known that these cars are primarily for the use of interstate passengers—those on long journeys. Mr. Nay quoted several times an expression in the formula as to the assignments which are "incurred exclusively or substantially exclusive in a particular service." (Formula page 3.) Certainly these auxiliary cars, particularly the diner and observation cars, are "substantially exclusively" for the interstate passenger, yet a state passenger is made to bear an equal proportion thereof, according to the passenger miles, with the interstate passenger. The concrete result is shown in Exhibit 13. The maintenance of way expenses of the auxiliary cars is $9620.07. The maintenance of equipment expenses are $2919.07. These are divided upon the percentage of 40.55 per cent state and 59.45 per cent interstate. If they are divided on the percentage of state and interstate riding in the Pullman, which is 85.32 per cent, charging the state passengers with only 14.68 per cent, a rough calculation will show that there is an overcharge to the state of $3203.00. This may not be exactly accurate, as some of the interstate passengers in coaches may use the diner and the obser-

vation car, and unquestionably some intrastate do use baggage cars, and now and then diner and observation cars, but certainly it is unjust to charge the state passenger, whose journey is only 19 miles, with 40.55 per cent of the expense of the baggage, diner and observation cars.

TRAFFIC EXPENSES.

The Traffic expenses were set down in the formula and in these exhibits on the terminal side of the division between line and terminal, but in dividing these expenses between state and interstate they were divided on the line units instead of the terminal units, the division being on passenger mileage and ton mileage, state and interstate. (Appellees' brief, page 17.) These expenses for the two months test period were $14,052.29. (Exhibit 8, page 1991.) Traffic expenses are incurred for the Vice President in charge of traffic, the traffic solicitor, general freight agent, general passenger agent, outside agencies like those in New York, and other cities, and other like items. (R. page 189-190.) The average intrastate passenger journey is 19 miles and the average intrastate haul is 25 miles. (Exhibit 39 R, page 2143.) The services rendered for which these expenses are incurred can from their nature be of little, if any, benefit to the intrastate traffic. The big items of these expenses are advertising and maintaining outside agencies. It is impossibie to conceive any substantial service resulting to the state traffic with this extremely short haul, for offices in New York, St. Louis, and San Francisco, and for expenses of advertisments setting forth the excellence of the service and the beauty of the scenery on the Frisco lines. The long haul traffic and competitive traffic which constitutes the interstate traffic is the one receiving the benefit of these expenses. These expenses are proper and doubtless bring good returns or else they would not be incurred. Mr. Nay and Mr. Hamilton express the opinion that this formula represents the use of the facility or expense, but intrastate passenger and the intrastate freight gets little or no use from these expenses. Where the journey is as short as this one, and where the freight haul is as short as this one, it means that only such trips are taken on this road as are necessary and it cannot mean that competitive business is being obtained by these outside agencies and these expenses for advertising purposes. This item will illustrate how extra expenses are built up against the intrastate traffic. From its nature, it is an expense attaching to the long haul business which is necessarily interstate on this road, because this road cuts into three corners of the state, and the average haul and journey is as just given.

The great amount of work done in division yards in the making up and breaking up of trains which are almost entirely interstate, and the charging of the intrastate passenger with an equal proportionate share of the dining cars, observation cars, and baggage cars, and charging him with an equal mileage proportion of the expenses of eating houses and charging him a double proportion of the terminal expense of them, show that the intrastate is being unfairly dealt with throughout, even in comparatively small matters. When the large matters resulting from the use of the engine ton mile, Symons percentages, and the time studies are considered it is easy to understand how the tremendous percentage of extra cost is worked out.

EQUATING BACK.

On page 56 of the appellees' brief it is stated that the appellants do not contest the soundness of the principle upon which the equation was based, but attack it collaterally, so to speak. Then there is a reference to one particular attack made by Mr. Simson, as if that was the only direct attack made upon it. The series of exhibits introduced by the state demonstrate that the four months period was not normal, or if the appellees prefer to put it the other way, that the test period was not normal, because there was serious and material difference between the operating and traffic conditions of the two periods. These exhibits constitute a most direct attack leveled against the equating of one period into another.

In addition to this broadside, the appellants made many detailed attacks upon it, and it is confidently submitted that each of these attacks are sustained. The principal ones of them are these:

(a) An excess of $23,080.62 was assigned to Arkansas for the four months period due to errors in computing the Memphis expense of the test period, and using the expense of the test period to equate back to the former period. (R. pages 610, 611, and Exhibit G, page 2234.) This item is sought to be minimized (Appellees' brief, page 57), by tracing out its effect on the intrastate traffic, but that is begging the question. Before there could be any separation of the state and interstate, the expenses must be properly assigned to the state, and the intrastate traffic could never be shown to be compensatory when burdened with the excessive cost alleged to be worked out against it under this formula, and this one item is one of the matters that helps to work out that extra cost.

(b). Difference in actual assignments of the two formulas in addition to the above error amounting to $24,581.60 in the account of injuries to persons, and $1649.09 in account of damages to property. (R. page 887.)

(c) The use of the total of the amounts for equation instead of using the five groups of accounts as arranged by the Interstate Commerce Commission, resulting in overcharging the state $7397.80 (R. page 612 and 613). This is the instance referred to on page 56 of the brief, as if it was the only attack upon the equation method. Mr. Hamilton sought to justify this method and went further and attempted to prove that if the apportionment had been made between freight and passenger of the non-revenue service that the assignment to the state would have been over $8000.00 more, but he made a blunder in this. Mr. Simson was only dealing with the assignment to the state, not the distribution, after the expenses were assigned to the state. This is fully shown in appellants' brief at page 73.

(d) The use of engine ton mile in the test period carried back to 1907 will carry its error into the equation.

(e). The test period assigns part of the expense of the Memphis bridge which is interstate to Arkansas intrastate which necessarily carries back that error to 1907. (R. page page 89.).

(f) The normality exhibits show such dissimilarity of the two periods that one cannot be reflective of the other. (Appellants' brief, page 75.)

At pages 58 to 64 of the brief of the appellees, it is argued as if the errors discussed in the appellants' brief were corrected by the railroad company. It was only the so-called "mathematical error" of $48,000 and the rental of the Kansas City, Memphis & Fort Scott Railroad, which were corrected by the railroad company, found in Exhibits 27A and 28. None of the other errors were corrected in any of the railroad exhibits. Mr. Simson used all of the railroad exhibits, including their errors, except where otherwise expressly specified, and his exhibits for the particular items substituted for the railroad's are therein stated.

NORMALITY OF THE TEST MONTHS.

At page 80 of the appellees' brief is an apparent effort to shift the question from the normality of 1907 to the normality of the test period in the last two months of 1913. Elsewhere the issues of this case are discussed, and that subject will not be repeated. It makes no difference

to the purpose of this case whether the four months of 1907, the period of inquiry, or the two months of 1913 were the normal period, or one was normal and the other abnormal. They must fit into each other in order to give any value to the equating process. The statistics demonstrate that they do not fit into each other, and the errors demonstrate that they do not fit into each other. The normality exhibits were put into the case to prove that they did reflect the condition of the railroad not only for those two months, but for a year and a series of years.

When the appellees began the introduction of their testimony of the test period of November and December, 1913, the appellants objected to such testimony. Mr. Hamilton was asked by counsel for the railroad if that test of that period was reflective of the year's business and the results obtained. Mr. Hamilton answered that they thought so from investigations and comparisons which they had made. Mr. Hamilton repeated that an investigation convinced them that these two months were reflective of the entire year. Then objection was interposed to taking a later year, and by *nunc pro tunc* proceedings carrying it back to 1907. The court replied: "They may be able to show that the facts obtained for 1913 conditions were the same and would apply to 1907 and 1906. Those are all questions that simply relate to what weight shall be given to the evidence." (R. page 76 and 77.) Mr. Hamilton continued with his testimony, finally introducing Exhibit 17, showing the extra cost of 15.43 per cent intrastate and 319.58 per cent intrastate freight, and stated, "This exhibit brings to a focus the results of the two months' test that we made." Then this occurs:

"THE COURT:

"Q. Are the items considered by you so general that they may be taken as representative of any year, any month or any time?

A. We have in process of preparation figures which we believe, as to the traffic and operating conditions, will show that; whether they do or not, of course, will depend upon their submission and examination here. We are preparing it and it is our judgment at this time, as far as we have gone, that this is a representative period. That may be refuted.

Q. And will apply just as well to 1906 and 1907, as it does to 1913 and 1914?

A. We believe in our ability to convince your Honor of that.

Q. What is that?

A. We believe in our ability to convince your Honor of that.

Q. You have evidence to show how it applies?

A. Yes, sir.

Q. That is the objection that was made by Judge Hill.

A. Whether it will be sufficient will depend, but we think at this time that it will." (R. page 91.)

Later Mr. Hamilton introduced the normality exhibits confessedly to meet the objections raised by counsel of the appellants and questions of the court. (R. page 448 and 450.)

STIMULATION OF TRAFFIC.

On page 84 of the brief, counsel calls attention to a mistake which was made in the appellants' brief in assuming that the second and third columns on page 3 of Exhibit 42 represented different sales. A re-examination of the exhibit shows that that mistake was made. The third column contains both the cash and ticket sales, whereas it was treated as containing only the ticket sales. The showing for the contention of the state is more favorable when this correction is made than it was in the statement of the facts in the appellants' brief. The point made was that the stimulation of traffic at border points while large in percentage, was small in actual traffic, and the figures were quoted from the exhibit showing this, and through error the columns were treated separately. The traffic at these border stations is materially less than stated in appellants' brief and the point is stronger than there made to appear on account of doubling the two columns. Attention was called to the fact that the court found that the stimulation of traffic at Jonesboro, Hoxie, Ashdown, and other interior points, which was from 28 to 33 per cent, was due to the re-buying by interstate passengers of intrastate tickets, whereas the exhibit showed that those points were selected as an illustration of the difference in the increase at places where there was no such buying and at places where there was such buying. Counsel says, "The facts upon which the finding was made are all in the record, and the court was obviously right in its conclusion." The only testimony on that point in the record is that of Mr. Hamilton, and this exhibit. Mr. Hamilton testified, "If we go into the interior of the state where passengers would have no incentive to re-ticket to cheapen the cost of an interstate journey we find that at Jonesboro the increase is only 33 per cent." The exhibit states in explaining the tables placed therein: "Also table showing the ticket

sales to Arkansas points from interior Arkansas stations sufficiently removed from the border to make no incentive to interstate passengers to re-ticket there." In the face of this evidence, and the only evidence on the point, it was found that this increase at these places was due to the change in the rate and counsel says that the court is obviously right. Counsel refers to the increased traffic under the two cent rate, as being nothing but re-buying at border stations, and therefore not bona fide intrastate increase.

Mr. Hamilton had an investigation made which caused him to deduct from the intrastate traffic the amount which his investigation led him to believe was not bona fide intrastate traffic, but really interstate traffic, which had availed itself of the cheaper rate, and found the passenger miles increased 21 per cent and a decrease in revenue for the year, when the two cent rate went into operation, under the three cent rate, of 14 per cent. (R. page 458.) In the face of this statement these diminution tables are applied for the test period of 1913 and the series of years where the three cent rate prevailed as if the decrease would have been 33⅓ per cent had a two cent rate been in force. Yet Mr. Hamilton finds that the decrease was only 14 per cent after subtracting from the intrastate what he thought was not bona fide intrastate traffic. This proves a decided increase in bona fide intrastate traffic and a falling off in revenue of 14 per cent, not 33⅓ per cent as claimed.

CRITICISM OF MR. MAYER.

In discussing the engine ton mile for a basis between passenger and freight the appellees' brief devotes much of it to a criticism of Mr. Mayer. (R. page 88 and 105.) Stray excerpts from his testimony are set out and he is severely criticised throughout this discussion and elsewhere throughout the brief. Mr. Nay and Mr. Hamilton testified in substance that the engine ton mile was the proper factor to use, because the engine represented the load behind it, and that the engine took into consideration in a limited way the speed of the train. Mr. Mayer put into evidence Exhibit "CC," compiled from the company's records, which completely upset the theories of Mr. Hamilton and Mr. Nay. This Exhibit "CC," was closely scrutinized as to its compilation and meaning and stands established. The reasons for the conditions shown in Exhibit "CC" are found in the testimony of Mr. Frates, who was put on the stand by the railroad and fully explained the operating conditions which made the

reasons for the conditions which Exhibit "CC" shows actually existed. That is, that the engine did not represent the load behind it, or its speed. The exhibit shows that the engines were carrying from 40 to 90 per cent of their rating. There was no uniformity in their haul, and yet the engine ton mile irrespective of the speed on which the engine was run or the load carried would be the same. Having upset their card house, Mr. Mayer naturally came in for criticism. It is not the purpose of this brief to review the arguments presented by Mr. Mayer or any other opinion witness. They are wholly inconsequential to the decision of this case. The developed facts will control here and not the opinions of Mr. Mayer, Mr. Nay, Mr. Simson or Mr. Hamilton. This attack upon Mr. Mayer is wholly unwarranted from anything said or done by him upon the witness stand, or elsewhere. Through a long cross-examination conducted by the learned counsel for the appellees and also counsel for the railroads of Oklahoma, he gave his reasons for every position taken, Whether his position was sound or unsound, depends upon the reasons given by him, and they are set forth in his testimony and you are most earnestly requested to read it in detail, particularly his cross-examination.

The railroads are intolerant of any witness, particularly one from a State Commission who disagrees with their eminent officials. This has been developed in many cases before this court, and your memory of the railroads' attacks upon the witnesses in the Minnesota and Missouri and Arkansas cases is referred to to substantiate this statement. For instance, Mr. Hamilton, who is the principal witness in this case for the railroad, appeared in the Iron Mountain Case as a witness for the State. He was then an employee of Haskins & Sells, the accountants who prepared the formula introduced by the State in that case, and he gave testimony in support thereof. His railroad experience then was the same as it is now, except that since 1912 he has been supervisor of efficiency of the Frisco road. His experience as detailed in his testimony there and as detailed in his testimony here was 17 years of railroad work. The railroads' attack upon his capacity to testify as an expert upon the problems presented in such a formula carried conviction to the learned trial court. After complimenting Mr. Hamilton's ability and candor this statement is made:

> "But the experience of Mr. Hamilton in connection with the management of a railroad, when compared with that of the witnesses introduced for the complainants, is very limited. At the age of 15 he began as a messenger boy for a railroad, and continued in different po-

sitions until 1906, when at the age of 32, he entered the employ of Haskins & Sells, as accountant, and has been in their employ ever since. Their and his employment has always been as accountants for the state, and in opposition to the claims of the carriers. His employment by railroads was always in a subordinate position; his highest position being that of chief clerk to a chief of a division. His duties were practically all of a clerical nature. Since he has been in the employ of Haskins & Sells, he assisted in gathering evidence, and making investigations for the use of the state in the Missouri rate cases, acting under the direction of a superior official of that firm." Re Arkansas Rate Case, 187 Fed. R., 290, on page 332.

The learned counsel for the railroads in that case, who is the same counsel for the railroad here, stated in his brief in this court as follows:

"Mr. Hamilton, as we now recall, was the only man among their accountants who had had any experience in railroad service, and his experience was not such as to qualify him to pass upon the many radical assumptions made in the formulation of their plan." Page 127, Brief of Appellees, Allen vs. St. L., I. M. & S., 230 U. S., 553.

He is now viewed in a different light. In the appellees' brief at page 186 it is stated:

"Counsel refer to Mr. Hamilton as having had railroad experience of an accounting nature only; this misunderstanding has been due to their lack of familiarity with the character of railroad work embraced in the duties attaching to the positions which Mr. Hamilton has filled in his seventeen years' railroad experience. The facts are that he has been engaged in practically every line of railroad work, and for many years was employed in stations, yards, and terminals, where the practical every-day operation of the railroad is carried on. He has been employed, not only in the operating department, but the traffic department and the accounting department as well. His opportunities for observation of every detail of practical operation have been numerous and have covered a long period of time. His intimate knowledge of these subjects is shown by his familiarity with the minutest details of operation, disclosed by the testimony."

These apparently irrelevant matters are called to your attention in order that you may see more clearly the attitude of the railroads, particularly this railroad, in attacking Mr. Mayer. The same is true to a more or less extent in the criticisms of Mr. Simson. No witnesses produced against

them is qualified to pass judgment; only their eminent officials are qualified to speak on these subjects. Counsel throughout his brief most highly extols each of his witnesses. He writes of them as we love to write of our dead friends.

THE MATHEMATICALLY DEMONSTRATED ERROR OF THE FORMULA.

On pages 134 and 152 of appellees' brief is an attempt to answer the contention that the formula is mathematically demonstrated to be wrong. The argument resolves itself into three propositions.

First: That the railroad exhibit used by the State was made for the purpose of ascertaining the pro rate of interstate revenue to be assigned to Arkansas and not made for the purpose of working out expenses of the entire line.

Second: That the terminal and line costs of Arkansas are greater than on the entire line because of the lesser density of traffic; and,

Third: That the exhibits and testimony of Mr. Hamilton are in error in stating that the terminal and line costs in Arkansas are reflective on the costs of the entire line of railroad.

Taking up these conditions in their order, first, it is true that the exhibit of the railroad used by the State was prepared for the purpose of ascertaining the proper proportion of the interstate revenue to be assigned to Arkansas. It was assumed in the exhibit and frequently so stated in the testimony of Mr. Hamilton and Mr. Nay that the terminal cost per ton of freight or per passenger, state and interstate, was the same and that the line cost per ton mile of freight or per passenger mile state and interstate was the same. It was contended with plausible reason that a mileage pro rate of the interstate revenue was unfair to the interstate because there was at least one terminal expense outside of the state incurred which did not enter into the operating expenses in the state, and that that terminal expense should be compensated for. The method of making that compensation was to work out a mileage equivalent equal to the cost of the terminal without the state. This exhibit stated and Mr. Hamilton testified that the line and terminal cost in Arkansas was fairly reflective of the line and terminal cost in the whole system, and therefore, it was fair to use the line and terminal cost ascertained in Arkansas, applied to the whole system. The appellants had a right to assume the truth of these statements. That

was the extent of their offending in this matter. They accepted these statements for their face value. Mr. Nay first and Mr. Hamilton later stated that if these line and terminal expenses were the same in other states as in Arkansas, that the plan pursued by Mr. Simson would produce the entire operating expenses of the entire system. Therefore, Mr. Simson built up his exhibit upon the testimony of the railroad to ascertain if these line and terminal units were correct. If they were the result would be the operating expenses of the system. The results demonstrated that there were excessive to the extent of about $5,000,000 each year the test was made. This thereby proved conclusively that the formula was wrong if the testimony of the railroads was true. It makes no difference if the railroads built up their exhibits for one purpose and the State used them for another, if it used them correctly. If their statements were true for one purpose, they were true for another purpose. If the railroad was seeking to deal fairly with the state in the apportionment of revenue, it will likewise deal fairly in the use of the same factors, for this other purpose to which they are equally applicable. But these factors prove the formula to be wrong if the evidence is true, and it does not lie in the mouth of the railroad to say its own evidence and assumptions are not true.

Second: It is contended that as there is a less density of traffic in Arkansas, and therefore, the expense in Arkansas is greater than upon the entire line. Calculations are made attempting to prove that the expense of transportation may be measured by the density of traffic. There is no evidence to sustain any such theory. If this theory could be adopted, the difficulty in rate cases would be solved. Merely obtain the density of traffic in any given state, obtain the density of traffic of the line, obtain the relation of one to the other, and you have exactly the expense of the given state; merely ascertain the density of the intrastate traffic, and the interstate traffic, and the problem is worked out. There is no warrant for any such assumption. Density of traffic does to a limited extent affect the cost of operation, but it is shown in the testimony of both Mr. Hamilton and Mr. Simson, which has heretofore been quoted, that that is to a very limited degree. Take the passenger side of the problem first, where the trains run regularly, and the testimony here is that there has been no appreciable change on the passenger service on the Frisco for many years; the expense is the same whether the coaches are filled, half filled, or carried empty. The same is true in a lesser degree on the freight side, the local freights and many of the through freights, as

explained by Mr. Frates, run on schedule whether they are loaded, or half loaded or not loaded at all. On the through freight trains the density of traffic does have an appreciable effect upon the expense, because these trains are not usually run until reasonably well loaded, but Exhibit "CC" of Mr. Mayer demonstrates that even through trains are run with a variation of from 40 to 90-odd per cent of the rating of the engine. There is great fluctuation shown in the statistics quoted as to the density of traffic between 1907 and 1913, in Arkansas, as compared with the entire system, and yet Mr. Simson's exhibits show relatively the same amount of excess cost in the years where the density was greater as in the years where the density was lighter. This is but a weak effort to overcome an error which is destructive of the Formula.

Third: There is also an effort made to show that the exhibits and testimony of Mr. Hamilton in stating that the line and terminal expenses in Arkansas are reflective on the expenses of the line and terminal of the entire system is error. At page 147 it is attempted to explain his testimony, which was quoted in the appellants' brief, by stating that the two big stations referred to by him in St. Louis were where all the freight in less than carload lots was handled. The testimony on that subject is here quoted verbatim:

"As an illustration, I have made a little research since the last hearing. We thought there was some inequality in this outside cost, and it was assuming too much when compared relatively with the big terminals. I was pleased to find that at St. Louis our two big stations, the Broadway station and our own station at Seventh and Cerre Streets, our cost per ton for handling freight has run between 36 cents and 39 cents for years; and that is pretty close to this Arkansas average. That strengthened my opinion that this is a fair equation, this comparison of terminal cost here in the state as a whole with such terminal cost outside. I took that up just to satisfy myself how relatively correct that was.

Q. How about less-than-carload?

A. That is in there, ton for ton.

Q. You disregard the fact that part of this freight moves less-than-carload?

A. Oh, yes.

Q. And treat it all as ton for ton?

A. Carload and less-than-carload, yes.

Q. It is a recognized fact that the less-than-carload costs much more than the carload?

A. That is true.

MR. MOORE: The haulage cost?

A. We are speaking of terminal cost, Mr. Moore.

"We recognize that fact, but it was a physical impossibility to keep the terminal cost of every carriage that comes in here separately as between carload and less-than-carload. This applies to the pro rate of interstate revenue and not at all to intrastate.

"Now, on the passenger side—

"MR. HILL: Wait a moment, before you get to that.

"The throwing in of the less-than-carload with the carload will necessarily make the average cost higher on the carload than it would be if they were kept separate?

A. Yes, sir; you would add some burden to it. You couldn't help but do that. Now, on the passenger side, the same plan was followed except we substituted 'passenger' for 'ton,' and passenger mile instead of ton mile. Shall I go into that in detail, Judge Hill?

A. It is the same thing?

A. It is the same principle, exactly." (R. page 261.)

It is thus seen that carload and less-than-carload freight in both instances are computed. Certainly there is more density of traffic in St. Louis than in Arkansas, yet the terminal cost there is from 36 to 39 cents per ton. When Mr. Hamilton gave his testimony, he then thought the terminal cost was 36 cents per ton, and later admitted the error, and that the correct amount under the workings of the Formula was 31 cents. Therefore, in a great city, and in a large terminal where the traffic is probably more dense than anywhere on the Frisco line, the terminal cost is from 5 to 8 cents per ton greater than in Arkansas, and yet it is seriously argued that because the percentage of density of traffic is less than the entire system that the terminal costs in the state are more. Be that as it may, the state accepted as true the railroad's own exhibit and the railroad's testimony, and on the truth of that the formula is destroyed. An estoppel against controverting its Formula and repudiating its testimony is invoked.

APPELLANTS' EXHIBIT "Y."

On pages 160 and 162 is a discussion of appellants' Exhibit "Y." The statement is made that Mr. Simson had stated that Exhibit "O" (afterwards changed to "O-1"), reflected the facts which the appellants desired to stand upon in this case. It is further stated that when Mr. Simson stood on Exhibit "O" he discarded the remaining exhibits, including "Y," and that they should be disregarded and dismissed

from consideration by the court. This is not a correct statement of Mr. Simson's position. He introduced many exhibits showing the condition of affairs on the road in the different periods and from different viewpoints, and explained carefully the plan of each exhibit, and the point made by it. Mr. Simson was asked which of his exhibits properly represented the return upon the railroad property, and he answered: "I think the logical one is the average return based upon the old formula, which I think is Exhibit "O," if I remember it rightly." (R. page 641.) Mr. Simson's theory was exactly correct, which was that Exhibit "Y" did not show an average condition, it correctly showed the actual condition during the four months' period and in his opinion the logical position was to consider the return from a period averaged instead of an abnormal period. There has been no discarding Exhibit "Y." Its purpose is useful. It is the same as Exhibit "27A" of the railroad, except that it makes the correction of errors, (counsel objects to the term of "errors" in referring to these corrections, and says that they are only differences of bases. It is not important, which term is used), and shows the actual condition of affairs of the road in the four months of 1907, before the averaging process is applied thereto. When the averaging process is applied, which is proper, in order to obtain a normal period, the result is shown in Exhibit "O," and which result as Mr. Simson properly stated, is the logical one to rest upon.

THE INTRASTATE RETURNS.

There are many statements throughout the brief that this error or method does not affect the returns on intrastate property. There are many statements that no effort was made by the state to separate the state and interstate traffic. Whenever a palpable error was discovered the railroad seemed to at once think it could be minimized by showing how little that particular error affected the intrastate traffic. The position of the state was simply this: The evidence showed that the railroad upon the whole business in Arkansas was earning a compensatory return on its property invested therein. This is shown even after applying the diminution tables to later years. Certainly there is no confiscation as to the whole business in the state. No testimony was offered by the railroads to ascertain the extra cost of the state over the interstate, if any, other than the results worked out through the formula; and the state has contended throughout that no reliable results are

worked out through it. It is palpably and glaringly wrong and mathematically demonstrated to be unsound and rests upon speculative opinions for every material factor therein. Therefore, when counsel argues and the witnesses contend that this or that matter does not affect the intrastate, except in a small degree, they are assuming that the extra cost of 15.43 per cent passenger and 319.58 per cent freight is inhering to the intrastate; and when calculations are made as to the effect of the particular error and these extra cost percentages are applied to intrastate, the effect of the error is minimized. If these calculations were made correcting these errors without carrying these grotesque extra cost percentages, the results worked out would be radically different. There is sufficient evidence in this record which has been referred in the briefs to justify this broad statement: If the interstate is properly charged with what it should be charged with and the intrastate only charged with what it is justly due, then the net result of the two classes of traffic will be in favor of the intrastate. Counsel criticise the use made of the cost and revenue factors in the appellants' argument, but it is necessary in order to obtain the net result to find the cost on the one hand and the revenue on the other. The extra terminal does impose an additional expense upon the state, but there is much extra expense incurred by the interstate, such—as on the passenger side—riding in Pullmans, using diners, observation cars and baggage cars, using better equipment and the speedier trains, as pointed out by the Interstate Commerce Commission—and on the freight side—there are many things, like charging the use of division yards to the intrastate where it is not their just burden, and many other matters heretofore referred to. Where the revenue on the freight side is more than three times intrastate over what it is interstate, and materially more on the passenger side intrastate over interstate, no other conclusion can be drawn, but that the net result is that the intrastate is the more profitable of the two classes. Certainly the traffic as a whole is producing for the period of inquiry and of all the later periods more than a compensatory return.

ALLEGED ERRORS IN APPELLANTS' BRIEF.

It is argued at page 175 that because the local train carries 85 per cent interstate and only 15 per cent state that such fact does not prove that the interstate does not bear the heavier expense of freight traffic. An argument is made that the larger per cent of the interstate moves on the cheaper through train, while the larger per

cent of the intrastate moves on the more expensive local train, and that the general result is that the interstate is less expensive than the intrastate. Calculations are made, but none of them are carried to the point of demonstrating this fact. They fall short of it. In fact, it is probable that the data is not in the record to bring them to a conclusion. The statement criticised was an answer to the court's opinion that the intrastate was more expensive on account of the local trains, and attention was called to the fact that out of every dollar of the expense of that train 85 cents must be borne by the interstate, which would naturally work out a greater burden against the interstate than against the intrastate traffic on account of the expensiveness of that service.

The illustration of the error of $1000.00 in $100,000.00 expenses is criticised as an assumption of operating expenses out of proportion to the property of the road. It was not assumed for a moment that the operating expenses of a railroad worth $16,000,000 were only $100,000 a year. These figures were taken for the purpose of easy calculation to demonstrate the point under discussion. The point made was that an error in the apportionment between freight and passenger would make a difference in the result between state and interstate. The illustration is perfectly true to demonstrate the point of it. No one cares what the figures are, because it was not taken as a demonstration of what the errors were in this case, but merely the effect of error in the assignment between freight and passenger. This illustration was thought to be necessary as it appears from the record that the trial court thought it immaterial as to the assignment between freight and passenger, as the result of the two classes of traffic was what was to be looked to finally (R. 94-95, 203). Therefore to make clear the argument that the mistake of the engine ton mile basis for assigning, between freight and passenger seriously affected the assignment between state and interstate, this illustration was made.

Respectfully submitted,

JOSEPH M. HILL,

Special Counsel for the State.

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IN THE

Supreme Court of the United States

J. SAM ROWLAND, WILLIAM F. McKNIGHT, AND THOMAS E. WOOD, RAILROAD COMMISSIONERS OF THE STATE OF ARKANSAS, APPELLANTS,

v. No. 648.

SIDNEY E. BOYLE, AS ADMINISTRATOR OF THE ESTATE OF WILBUR F. BOYLE, DECEASED, AND THE ST. LOUIS AND SAN FRANCISCO RAILROAD COMPANY.

BRIEF FOR APPELLEES.

JOHN M. MOORE,
Attorney for Appellees.

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Of Counsel.

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SIDNEY E. BOYLE, AS ADMINISTRATOR OF THE ESTATE OF WILBUR F. BOYLE, DECEASED, AND THE ST. LOUIS AND SAN FRANCISCO RAILROAD COMPANY.

BRIEF FOR APPELLEES.

This suit was brought by a stockholder of the St. Louis & San Francisco Railroad Company against that company, the Railroad Commission of Arkansas and two citizens of the State, representing passengers and shippers on the railroad. The plaintiff sought to enjoin the passenger rate of two cents per mile prescribed by a statute of the State passed on February 9, 1907, and the tariff of freight rates promulgated by the State Railroad Commission on June 4, 1908, on the alleged ground that both classes of rates were inadequate and confiscatory. A temporary injunction was granted at the beginning of the suit and a final decree was rendered perpetually enjoining the enforcement of the statutory passenger rates and the Commission tariff of freight rates on the 9th day of April, 1915, from which decree this appeal was prayed.

THE ISSUE.

Counsel assume that the issue in this case is whether the earnings were compensatory when the preliminary injunction was granted, in support of which they cite a statement of the court in Wilcox v. Consolidated Gas Co., 212 U. S. 52, that this court concurs with the court below in holding that the value of the property is to be determined as of the time when the inquiry is made regarding the rates. The question before the court below in the case cited was whether the value of realty should be assigned as of the time of the inquiry, or on the basis of the cost of the property to the complainant, many years before. The investigation for the purpose of determining the reasonableness of the rates relates rather to the future than to the past, and should not be based on one period alone when a broader field of inquiry is open. Many of the cases of this kind are brought before the rates complained of are put into effect, and are tested either by the application of the new rate to prior business or to the future business. The bill was filed in July, 1908; the application for temporary injunction was heard and the injunction granted on September 3, 1908. The proofs filed at the preliminary hearing, in support of the application, covered the months of September, October, November and December, 1907. The evidence used on the final hearing was taken in 1914 and covered four years of the intermediate period as well as the four months in 1907. This was deemed to be not only proper, but essential to a fair and satisfactory showing of the effect of the rates complained of. If it had been shown in this case that the rates did not yield an adequate return for the four months in 1907, but did in the succeeding four years produce a reasonable return, the relief

would unquestionably have been denied. If, on the other hand, it should turn out that the rates yielded a reasonable return during the four months period, but that during the succeeding four years the return was confiscatory, the rates could not be held to be reasonable.

But counsel say in that case the finding of the court below that the rates were confiscatory should be reversed, the case dismissed and liability on the injunction bond enforced for overcharges during the time the injunction was in force, on the ground that it was improperly issued, notwithstanding the court had correctly found that the rates were illegal and could not be enforced.

In the case of Knoxville v. Water Company, 212 U. S. 1, 14, suit was brought on December 7, 1901. The court, referring to the fact that the decision of the court below was based solely on the operations of the fiscal year ending March 31, 1901, held it was error to confine the investigation to, and base the judgment upon, that year alone.

"The precise subject of inquiry was, what would be the effect of the ordinance in the future? The operations of the preceding fiscal year, or of any other past fiscal year, were valueless if the year was abnormal, and were only of significance so far as they foretold the future. * * * The evidence of the operations of the years succeeding to the ordinance is relevant and of great importance, and by a consideration of such evidence a much greater degree of certainty could be obtained. * * * We are unable to say what the effect of the evidence excluded would be; all we can say is, that the inquiry was unduly limited by the exclusion of the evidence of the operations of subsequent years."

AN OUTLINE OF THE METHODS PURSUED BY THE APPELLEE, RAILROAD COMPANY, IN DIVIDING COMMON EXPENSES BETWEEN INTRASTATE AND INTERSTATE TRAFFIC, AND IN MAKING A TEST FOR THE PURPOSE OF DETERMINING THE RELATIVE COST OF THE TWO CLASSES OF TRAFFIC.

In view of the great importance of this case to the parties to the proceedings, as well as the public, and the fact that an effort has been made to determine the expense of conducting intrastate traffic by a method that has not heretofore been used, *i. e.*, with reference to the use made of the property and facilities, rather than on the basis of gross revenue or other factors heretofore relied on, it is proper that we should make some explanation of the method used for that purpose.

The St. Louis & San Francisco Railroad is operated in other States besides Arkansas, and it was necessary to ascertain, as a first step, what portion of its total revenues should be credited as intrastate earnings within that State, and what portion of its operating expenses, taxes, rentals and other like expenses, should be charged to the conduct of intrastate freight and passenger business within the State. The earnings accruing upon the intrastate traffic of the railroad were then to be separated as between the freight and passenger branches of the service, and the same segregation made in regard to the operating expenses. The assignment to the State of the gross revenue on intrastate business was not difficult. The instrumentalities through which the railroad collects its gross revenues, and the records from which the revenues are tabu-

lated in its books and accounts lend themselves readily to such an assignment. Operating expenses, and kindred charges against operating revenues, which are incurred wholly within the State, can be definitely allocated by the ordinary records of the company, or by means of special investigation. Those which are incurred jointly in two or more States must necessarily be assigned between those States on some basis of *pro rate,* and after their allocation to the State must be subdivided between the various classes of traffic, viz., freight, passenger, intrastate, interstate and mail and express, etc., within the State. The question then becomes one of the basis upon which these assignments of operating expenses, and charges incident thereto, shall be made, first, to the State, and, second, as between the various classes of traffic conducted by the railroad within the State. It is also necessary to apportion the value of the property used in transportation among the various classes of traffic to the use of which it is devoted in order that an assignment of value may be made in accordance with the use made of the property.

This suit was pending at the time the opinions were handed down in the Minnesota and Arkansas rate cases, 230 U. S. 352, 553. Very soon after those cases were disposed of the plaintiff's representatives, in conjunction with the representatives of other railroads operating a large mileage in the Western and Southwestern States, held a conference for the purpose of endeavoring to devise a formula for the assignment of operating expenses and property values in accordance with the suggestions contained in the opinions in those cases. Many of the ablest railroad officials from the executive, operating, accounting, statistical and legal departments of the

various roads participated in this work, and devoted much time and care to the preparation of a formula under which the various assignments could be made on the basis of the use of the property and the facilities employed in transportation, in the several classes of traffic. This formula sets forth in detail the results of the deliberations and judgment of the committee by which it was formulated as to the proper method of apportioning such expense incident to the transportation of freight and passengers as is common to different classes of traffic, on the basis of the use made of the property in the various branches of the business. The accounts are subdivided and the factors applied in accordance with the Interstate Commerce Commission classification of railroad accounts. The formula was exhibited in evidence by the appellees as exhibit 1. The *personnel* of the committee, and the railroads represented by the members, appear on the inside of the first sheet. The members of the committee were men of wide experience in all branches of railroad service and of undoubted qualification. The minute detail with which every phase of the problem is treated is an assurance of the careful consideration given by them to the subject, and the spirit in which they acted is illustrated by the following extracts from the testimony of Mr. F. Nay, comptroller of the Rock Island lines, a man of great experience and unquestioned integrity:

"This formula was prepared with the utmost care for the purpose of making an accurate separation of the operating expenses among the different classes of service, with the ultimate view of getting as accurate a division as possible between State and interstate, freight and passenger expenses, without regard to what the final result was going to be. * * *"

"We attempted to make a separation just as accurately as possible, having in mind the use made of the property by the different classes of traffic. * * *"

"We did not know, and could not know, when we were working up these statistics, where they would land us. We did make an honest effort to get at the facts as near as possible, letting the result be what it would." (Rec. 292, 293 and 320, 321.)

The general scope or outline of the plan is described on pages 3 to 5 of the formula. Certain modifications in the application of some parts of the formula were adopted by the appellees in the preparation of the exhibits in this case, for the purpose of adapting them to local conditions on appellees' railroad. These modifications were in no instance departures from the principle of the printed text. They are set forth on buff-colored sheets interlined in Exhibit 1, which contain the same page number, followed by a letter of the alphabet, and with the subheadings which appear upon the original text for the purpose of identifying the modifications with the text. Full explanations as to the scope and administration of the plan, and definitions of the technical terms used will be found on pages 2, 3, 4 and 5 of the formula. The captions of the various accounts are descriptive of the character of revenue credited and expenses charged to each. The numbers appearing opposite the captions in each account of the formula are those prescribed in the Interstate Commerce Commission's classification of accounts. Additional explanations of the contents of the revenue accounts are set forth in detail in appellees' Exhibit No. 4, which supplements the description of the apportionment of revenues to the State to freight and passenger service, and to intrastate and interstate, mail and express traffic, set forth on pages 6,

6-A, 6-B, 6-C, 7-A, 7-B, 7-C and 7-D of the formula, and explains in minute detail the processes followed in making the assignment of revenues, the underlying principle being a direct allocation wherever possible. This is illustrated by the following extracts from Exhibit 4:

"Intrastate freight revenue earned in Arkansas as set forth in Exhibit No. 22 was taken from the records compiled by the railroad in the ordinary keeping of its accounts, with this exception, that while the railroad in preparing the intrastate revenue figures formerly reported to the State Railroad Commission made an arbitrary adjustment of its gross intrastate revenue in Arkansas on account of undercharge collections, overcharge payments, switching absorptions and kindred items, in preparing the figures shown as intrastate freight revenue in Exhibit No. 22 filed in this case, covering the year ended June 30, 1913, all such adjustments were analyzed and actually applied against the gross earnings covering the actual road haul to which they attached. * * *"

"Intrastate and interstate (the latter including transstate) passenger revenues set up in Exhibits Nos. 22, 24, 25, 26, 27, covering the years ended June 30, 1913, 1912, 1911 and 1910, and the four months ended December 31, 1907, were assigned to Arkansas on the same basis as hereinbefore described for the assignment of freight revenues, with the exception that the adjustments of overcharges, undercharges, etc., were so small in amount (being about one-tenth of one per cent of total gross passenger revenues assignable to Arkansas in the year ended June 30, 1913), that their analysis in detail was considered immaterial, and adjustment was made in a lump sum against the ascertained interstate revenue assignable to that State."

The same is true in regard to operating expenses. All that could be definitely located in the State were assigned thereto; all other expense was assigned on the most closely related use basis that could be found.

The next step was to divide the operating expenses allocated or assigned to the State between freight and passenger,

intrastate and interstate, mail and express. As a first step in that direction, the operating expenses properly chargeable to the State have been segregated into two classes, viz, "line" expense and "terminal" expense. The formula at page 3 describes the "terminal" expenses as such as are incurred in originating, terminating and handling traffic at stations, and to and from trains on which it is transported, including the reception and delivery of traffic interchanged with foreign lines. It describes "line" expenses as such as are necessary to, and are incurred exclusively, or substantially exclusively, in the hauling of traffic through or within the State.

In further explanation of the meaning of the terms "line" and "terminal" as used in the formula, we quote the following statement from the testimony of Mr. T. A. Hamilton, under whose supervision the data upon which the exhibits were made up was prepared and who was a member of the committee that prepared the formula. He says:

"Terminal expense, in the ordinary acceptance of the term, conveys to most people, and to most railroad men, for that matter, the end of the trains' run; in this formula it does not mean any such thing, except perhaps by accident. By 'terminal expense' is meant the expense of originating and delivering the freight; that is, receiving it from the shipper and delivering it to the consignee, and all of the collateral expenses that go with that. Perhaps they might better have been called 'non-haulage' expense, and 'line' expense." (Rec. 74.)

And the following extract from the testimony of Mr. F. Nay, a member of the committee that prepared the formula:

"The terminal expenses were those incurred in connection with originating the traffic and loading it, making the waybills, and doing all of the work that is necessary to get the traffic on to the train at its originating points; and after

it reached destination to unload it and make freight bills, collect the money, and all of the work that was necessary to the handling of the freight after it reached destination.

"The line expenses were those in connection with the hauling of the freight or the passengers—the traffic, whatever it might be, after it was ready for shipment until it got to destination to be delivered. * * *"

"The line expense is all of the expense necessary to the actual movement of the traffic after it is ready to be moved until it reaches destination and is ready for delivery. And by destination or point of origin here, I have reference to the movement over the carrier's own line. That is to say, if any railroad—say railroad A receives a shipment from railroad B, at any station, it is considered in A's account as originating at that station just the same as if the shipment had been received from a shipper at that point.

"That same theory prevails at destination, where a delivery may be made to a connecting carrier.

"Of course, there were some expenses, like 'general' expenses, which are not in direct relation to either terminal or line expense, but they were apportioned between the line and terminal in accordance with the provisions of the formula" (Rec. 294.)

The division between line and terminal expense is largely the basis of the entire plan of apportionment contained in the formula used in this case. Notwithstanding the fact that the line and terminal service is the most natural and obvious line of primary or fundamental division of operating expenses as between the different classes of traffic, it has never been used as an underlying factor in any division heretofore attempted, so far as we are advised. The nearest approach to it was the plan followed by the State in the Arkansas rate case (Allen *et al.* v. St. Louis, I. M. & S. Ry. Co., 230 U. S. 553); but in that case the prime factor of division was the local and through trains, while under the

present formula the plan starts with the assignment of the expenses to the State, and then the division between line and terminal and freight and passenger service, at which point, in making the division of the expense incurred in transportation of intrastate and interstate freight, the division between local and through trains begins, as will be seen later on. Through a test made in the months of November and December, 1913, in complying with the provisions of the formula, definite information was obtained in regard to a matter which has given rise heretofore to much opinion and speculative evidence in regard to the increased expense of transporting intrastate over interstate traffic, growing out of the long and short haul incident to the two classes of traffic. It is universally recognized among railroad operators that short haul traffic is more expensive; that every ton of freight and every passenger transported must receive two terminal services on each haul or journey, and therefore the shorter the haul or journey the less the mileage over which the cost of the two terminal services can be spread. Recognizing that the terminal service constitutes an element of cost of a totally different nature from the line or haulage service, an attempt was made by the committee to find a plan by which the expense of the two classes of service could be segregated, so that the terminal service cost might not be made to absorb burdens which it is proper to place upon the line or haulage cost, resulting in a failure to charge to the short haul traffic its proper proportion of the terminal cost. This was one of the causes that induced the committee to use the line and terminal divisions. In litigation of this character there has heretofore been great difficulty in determining the relative expense incident to intra-

state and interstate traffic growing out of the long and short haul, and in the Arkansas rate case referred to, the State attempted to obviate this difficulty by segregating the cost of terminal service from other costs by setting aside as terminal cost the "station and yard" expenses in their entirety, and charging to the haulage, or what in the formula used in this case is called "line service," all the other transportation expenses. But they did not in this separation go beyond the Interstate Commerce group of "transportation expenses." Under the formula we are presenting here, and in the exhibits offered in evidence in this case, this essential separation of line and terminal service costs has been made in the minutest detail, not only in the transportation expenses, but throughout every item of the maintenance-of-way and maintenance-of-equipment expenses also; and this segregation has been made direct, according to the use of the railroad property, plant and facilities in the line and terminal services, taking careful account of the line and terminal functions performed in each individual instance, so that expenses have been divided between line and terminal cost in accordance with the use of the property in which the expense was incurred. The evidence sets forth in detail, and the exhibits explain, how this division of line and terminal expenses upon the use basis was made, right on the ground where the line and terminal service was performed, and the expense thereof incurred.

We thought it well to go into the division of expenses between line and terminal service at this point, and will show further along, in connection with the exhibits and evidence,

by what processes, and in what careful and minute detail, this most important division of expenses has been effected. The object has been, in separating the expenses, to consider the traffic according to its use of the track, equipment, facilities and everything that is employed in the transportation of freight and passengers, and to ascertain to what extent these facilities are used in carrying on the different classes of traffic.

The manner in which this division was made is set out in detail in Exhibit No. 1, on pages 12 to 16, inclusive, under the heading of "Apportionment of Expenses Between Line and Terminal by Primary Accounts," and the subdivisions thereof. It was necessary in complying with the provisions of the formula to collect certain data to be used in making the division of expenses. Some of this data was already contained in the company's regular records kept in the ordinary conduct of its business, but the larger part of it could only be secured by a test in connection with the current operation of the railroad. A special test was made, embracing the months of November and December, 1913, and covering every phase of operation connected in any way with the divisions sought to be made. The method pursued in making the test is described in Exhibit 2, which is printed as an appendix at the end of the brief for the convenience of the court. The forms prepared for recording the facts obtained, and used in separating the traffic between line and terminal, freight and passenger, and in some instances intrastate and interstate, will be found in Exhibits No. 2-A to 2-K. The descriptions contained in Exhibit 2 will inform the court as to the basis and methods of making the divisions between line and terminal, freight and passenger, intrastate and interstate insofar as the same de-

pend upon the test, and Exhibit 3, which is also printed in the appendix at the end of the brief, will afford such information as depend on the current records of the company.

The line and terminal expenses having been separated and divided between freight and passenger service (in some instances the divisions between line and terminal, freight and passenger, was the result of one combined analysis or study; in others separate divisions were first made between line and terminal, and, subsequently, of the line and terminal expenses separately between freight and passenger service) the expense of the mail and express business was segregated from the total of the passenger business, both line and terminal, within the State. The segregation of the mail and express expense was made on the basis of the "car foot" miles which is described in Exhibit 3 (appendix), pages 212-213.

The residue of the passenger expenses, after exclusion of the mail and express proportion, were divided as follows: The terminal passenger expenses were divided between intrastate and interstate in proportion to the number of passengers of each class actually using terminal facilities or benefiting by terminal service rendered. The line passenger expenses were first divided between coach or ordinary passenger carrying car service, Pullman car service, and auxiliary passenger train car service. By auxiliary passenger train car service is meant the baggage and dining car service. This division between the coach, pullman and auxiliary car service was made on the basis of the car foot miles of each class. It will suffice to say here briefly that the car foot mile division is upon the basis of the lineal feet of space devoted in passenger trains to each class of service, and the charges made to

each class of service on the basis of the number of miles such car service was actually hauled in passenger trains. This is an eminently fair division of passenger line, or haulage, expenses. The entire passenger line or haulage expense incurred by the railroad necessarily culminates in the operation of the passenger trains, and it is undoubtedly fair to divide this expense between the various services—coach, pullman and auxiliary—in proportion to the amount of space used by or assigned to each service in the passenger train, multiplied by the miles such space was hauled in the train. The line passenger expenses, after their assignment to coach, pullman and auxiliary car service, were subdivided between intrastate and interstate in the following manner: The coach proportion was charged to intrastate and interstate respectively in proportion to the number of passengers carried one mile of each class in coaches. The pullman proportion was divided between the intrastate and interstate on the basis of the number of passengers of each class carried one mile in pullman cars. The auxiliary car proportion was divided between intrastate and interstate on the basis of the total number of passengers of both classes carried one mile in passenger trains, combining the coach and pullman passengers, because the auxiliary cars serve both alike.

The freight terminal expenses were divided between the intrastate and interstate in minute detail, thus, after the expense actually incurred in connection with each class of terminal service had been ascertained, it was divided between intrastate and interstate in proportion to the number of consignments, and tons or cars of intrastate and interstate

freight, respectively, using terminal facilities, or benefiting by the various classes of freight terminal service. The line or haulage freight expenses were apportioned first among local and through freight trains and mixed trains. The expenses attaching to the mixed trains were divided first between freight and passenger services in which the train was employed on the basis of the gross ton miles of passenger and freight equipment and contents, respectively. These divisions are explained on page 28-A of Exhibit No. 1.

The passenger proportion of the mixed train expenses was included with the straight passenger train expenses and divided in the manner above described. The freight proportion of mixed train expenses was included with the expenses assigned to local freight trains for the reason that the mixed train performs all of the functions of the local train and is simply a local freight train with passenger equipment attached.

The local freight train expenses were divided between the intrastate and interstate freight upon the basis of the number of tons one mile of each class of freight carried on such trains.

The through freight train expenses were divided between intrastate and interstate on the basis of the number of tons one mile of each class carried on such trains. Some expenses in both the freight and passenger groups have been definitely assigned direct to intrastate and interstate, such as "loss and damage freight," "loss and damage baggage," etc.

TRAFFIC EXPENSES.

Traffic expenses, freight and passenger separately, were not included in their ultimate division between intrastate and interstate either as terminal expenses or line expenses, but were divided directly between intrastate and interstate on the basis of the volume of traffic; that is, upon the passengers one mile and tons one mile in each class, respectively.

As a matter of convenience, these expenses were shown in the terminal column of Exhibits Nos. 8 and 9. They were not charged as terminal service in any way, nor divided on the number of tons or passengers or other terminal units. Mr. T. A. Hamilton was questioned about this at some length and testified:

"We had an expense, a traffic expense, which, strictly speaking, was neither haulage nor nonhaulage. For convenience in preparing these exhibits, we noted them down on the terminal sheet. It is not incurred at the station, by the station agent, or by his force; if it is, it is not chargeable there under the Interstate Commerce rules. It is the traffic solicitor, general freight office and general passenger office, and has nothing to do with the station service. They are employed to secure traffic, and we measured their efficiency, or, perhaps, I should say, the benefits the traffic derived, State and interstate, from the expenditure of that money, on the basis of the traffic they got, the net ton mile, State and interstate. Traffic expenses has absolutely nothing to do with station service. We had to put it somewhere until we could dispose of it between State and interstate, and we put it on the terminal sheet," (R. 189, 190), and at pages 190 and 191 he testified that this expense was divided on ton miles and passenger miles. (R. 190, 191.)

The formula under which this assignment was made provides that all traffic accounts shall be divided between State and interstate on the basis of net ton miles and passenger

miles (Exhibit 1, pages 32-35, subhead "Traffic Expenses"). In dividing expenses of this character incurred jointly for the freight and passenger services, appellees followed the rule prescribed by the Interstate Commerce Commission in its classification of operating expenses, which provides under Account 53, that the pay of such joint traffic officers, and their office and other expenses shall be apportioned equally between the departments over which they have jurisdiction.

GENERAL EXPENSES.

General expenses, in accordance with the well established cost accounting practice, was divided as an overhead expense in proportion to the distribution of all other expenses.

NONREVENUE FREIGHT AND PASSENGERS.

The cost of line and terminal service respectively performed in the transportation of company, or nonrevenue freight and passengers, was distributed over the revenue service in proportion to the direct cost of the different classes of service in the manner prescribed in the formula, Exhibit No. 1, page 37. See Exhibits 10 and 11, *infra*.

The foregoing pages contain an outline of the plan of division followed, reaching ultimately to the apportionment of the expenses chargeable to the business as between the freight and passenger, intrastate and interstate, and mail and express traffic as developed in the test covering the months of November and December, 1913.

The object in making the test was to effect a division of the expense among the different classes of service with reference to the use made of the property and facilities in such service, thereby establishing the cost relation between intrastate

and interstate traffic, freight and passenger separately, as well as to ascertain the extra cost of conducting intrastate traffic, and of what it consisted.

All the exhibits, from 2 to 17, inclusive, refer to and are based on the two months' test, one of the main objects of which was to establish by actual facts, rather than by opinion evidence, the excess or extra cost of intrastate traffic, both freight and passenger, over interstate. The extra cost developed by the test was applied to the business of the year 1913, to which attention will be directed later. We will now call attention to these exhibits in their proper order. Exhibits 2, 2-A to 2-K, 3 and 4 have been explained.

EXHIBIT 5.

Exhibit 5 describes the method of assignment to the State, and apportionment between the different classes of traffic within the State, of taxes, rentals and hire of equipment.

TAXES—The apportionment of State, county and municipal taxes between freight and passenger, intrastate, interstate, mail and express follows the division of the valuation of the property prescribed in the formula at pages 38, 38-A, 39 and 39-A as applied on page 8 of Exhibit No. 18. The Federal income tax was assigned to Arkansas in Exhibit No. 19 on the basis of the relation of the net earnings in the State to similar net earnings of the entire system in all the States. The proportion assigned to Arkansas was divided between freight and passenger, intrastate, interstate, mail and express on the basis of the net earnings of each class as shown in Exhibit No. 22. These assignments of State and Federal taxes are also contained in Exhibit No. 19. It is hardly necessary to state that

property taxes follow the value of the property, and the income tax the earnings, because of the direct relation of property taxes to property values, and of income taxes to net earnings.

RENTALS AND HIRE OF EQUIPMENT—The manner of apportioning these items is explained fully in Exhibit 5, beginning on page 1 and continuing to page 4. Inasmuch as there was no controversy over these assignments, it is not necessary to deal with them in detail. It is sufficient to say that the division was made wherever possible on the basis of the actual use made of the rented property or facility, and, in regard to hire of equipment, that an analysis of the charges and credits to that account was made up from original vouchers, and the records underlying such bills and vouchers, for the purpose of segregating the charges and credits as between locomotives, passenger cars and other equipment. After the net amount of debit or credit was ascertained for each class of equipment, an assignment to the State was made on the basis of the mileage made by the respective classes of equipment in the State as compared with the mileage of the same class upon the entire road. Much of this item is assigned automatically as between freight and passenger service by reference to the class of the equipment.

EXHIBIT 6.

This is a table of sundry transportation, and other statistics, used as bases for factors applied in various divisions of earnings, expenses, etc., and contains in tabular form the results of the tests and investigations recorded in Exhibits 2,

2-A to 2-K and 3. It affords a ready reference to ascertain the percentage relation of the various factors brought together in the test, and applied in working out the results.

EXHIBIT 7.

This exhibit contains a statement of the amount of each class of expense incurred on the entire railroad during the test period, and the amount thereof assigned to Arkansas, under the formula. The mileage of the system and of the State, respectively, is shown on the exhibit, and it appears that about 12½ per cent of the mileage of the system is in Arkansas and 10½ per cent of the total expenses during the test period was charged to that State.

EXHIBIT 8.

Exhibit 8 divides the expense assigned to the State, and carried over from Exhibit 7, between line and terminal service. In the first column, opposite each item or account, there is a reference to the page of the formula (Exhibit 1) under which the division was made.

EXHIBIT 9.

Exhibit 9 contains a division of the line and terminal expense in the State, under the division made in, and brought forward from Exhibit 8, between freight and passenger service. This exhibit contains a similar reference to the pages of the formula under which the divisions were made, and the two exhibits (8 and 9) are based on the special investigations made and the records kept by agents, train men and yard men

as shown and described in Exhibits 2 and 2-A to 2-K, and the evidence introduced as to the proper division of locomotive and car repairs between line and terminal, to which we will hereafter refer.

The following testimony of the witness, T. A. Hamilton, as to the manner in which the information was obtained and the data collected, from which the division of the maintenance-of-way expenses between line and terminal and freight and passenger service was made in the test period, we think will be of interest, as it illustrates the method pursued with reference to all other divisions, and the means employed to obtain detailed and accurate information in regard to the extent to which the property and facilities, in the maintenance and operation of which the expense was incurred, were used in the various branches or classes of service to which it was devoted:

Mr. Hamilton testified:

"It is first necessary to determine the proportion of maintenance of way expense which was chargeable to line service and to terminal service, that is, the portions of expense incurred in keeping up track and structures and appurtenances which were used by the line service, and which were used by the terminal service. To do that we had to get very close to the ground. In the months of November and December, 1913, we had our section foreman keep an actual account of the entire labor and material expenditures. It was done in this way: We went out on the line, sat down with each section foreman, took his time and material books (of which he renders one each month to the superintendent, who in turn reports to the auditor) and classified each track over which each individual section foreman had charge according to its use as a line track or a terminal track, or common to line and terminal. If it was used exclusively for freight terminal service, we marked it as a freight terminal track. If it was used exclusively for line service, we marked it as a line track, and all our straight line tracks are common to freight and passenger. We had him then enter on each track section,

(five or six miles) each day, a division of his labor and that of the men employed under him, and material used, as between these classes of tracks. His time and material books were fitted to the tracks which he had in his charge. In other words, we made a hole for him to put his figures into and numbered the tracks. If he worked on track 1 he charged track 1. We classified track 1 when we got his book, as a line track, or terminal, or freight, or passenger. We accumulated in that way the actual maintenance of way expenses for these two months. It is subdivided between freight and passenger tracks and line and terminal tracks. That also extends to the buildings, crossings and other matters that the section foreman keeps up.

"As to the bridges, buildings, and similar structures, we maintain regularly what we call structure reports, in which the charges for repairs or maintenance of each building, each individual building, or each individual bridge structure, are kept separately. That is a part of our regular accounting scheme. We had, then, without extra effort the cost of repairs of individual buildings, bridges and trestles. It only remained to classify those according to their use as between line, terminal and freight and passenger. That was the basis of our line and terminal, freight and passenger division, of maintenance of way expenses.

"*The Court*: Q. Then you apportioned the expense of maintenance of right-of-way and structures according to the use?

"A. The ordinary use, Your Honor, for which the track or structure was provided by the company.

"Q. If there was a wash-out, or if the platform rotted and had to be replaced, then it was apportioned according to the use by the different trains?

"A. Yes, sir; if it was a freight platform it was charged to the freight terminal." (R. 107, 108.)

The same care that was exercised for the purpose of obtaining exact and detailed information upon which to base a division of maintenance of way expenses was exercised in

every other branch and department of the service, as will be seen by reference to the description of the methods employed, contained in Exhibit No. 2, and the forms upon which reports were required to be made by station agents, yard foremen, conductors and trainmen, including extra men placed on trains for the purpose of obtaining and reporting the information required in making the divisions between all other classes of service, with the instructions printed on the back of, or in connection with the forms, and the system of instruction imparted to the agents and employes who were charged with the duty of keeping record of the facts. When it was decided in the Minnesota Rate cases that the old bases of division of expenses, such as revenue, ton miles, train miles, etc., were not, alone, proper factors for that purpose, and that a basis must be found in the use made of the property, which would correspond to the extent of its employment in the business, it became necessary to find a means by which such an assignment could be made, and the expense of operation apportioned among the different branches of the service involved in transportation, ascertained and established by tests made in the actual use and operation of the property, and a ratio of cost established between the various lines of traffic based on actualities, or facts, rather than on opinion and expert testimony of railroad officials. The methods prescribed in the formula, and applied in the exhibits in this case, were devised by intelligent and capable men, whose experience fitted them for the task, whose purpose it was to devise a plan in conformity to the views expressed by the court, and whose combined judgment, we submit, is entitled to great weight and respect.

EXHIBITS 10 AND 11.

The first of these exhibits explains the method of apportioning the cost of non-revenue (company) service between freight and passenger, line and terminal, revenue service. In Exhibit 11 is shown the application of the adjustment of the cost of transporting company material and non-revenue passengers between freight and passenger revenue services.

Company property, material and employes have to be moved from point to point on the frieght and passenger trains in the conduct of the business of the railroad. The cost of this service is a necessary charge on the revenue freight and passenger service, and it should be assigned in such manner as to distribute the burden in proportion to the benefits accruing to each class of service. How this is done is set forth in detail in the two exhibits. We are advised that this is the first effort that has ever been made in railroad accounting to distribute the non-revenue service cost between the revenue freight and passenger services. The matter is explained in the testimony of Mr. Nay on cross examination at pages 296, 297, 298 of the record.

EXHIBIT 12.

This exhibit contains a division of passenger, "line and terminal," expense between the passenger-carrying service and mail and express traffic on the basis prescribed by the formula at pages 25, 26, 27, 31, 32 and 33. Some explanation has been given of the method of division here used in connection with Exhibit No. 3. In further explanation of the subject we quote the following evidence of T. A. Hamilton:

"Exhibit No. 12 shows, the division of passenger expenses, both line and terminal, between straight passenger traffic, and mail and express, or, rather, it shows the results of that division. That has been made, in the case of line service, on what is termed the 'car foot mile' basis. For the months of November and December, 1913, the actual consist of cars in every passenger train moving within the State of Arkansas was analyzed, and the number of lineal feet in each train assigned to the mail and express service, and assigned to all other passenger train service, were determined, the measurement of the space assigned in each car to each class of service being multiplied by the number of miles that that car ran in Arkansas. Those car foot mile percentages have been used to divide between passenger service and the mail and express service, or, perhaps, I should have said the passenger carrying service and the mail and express service, the passenger expenses. The results of that division are shown in this Exhibit No. 12, which is herewith introduced.

As explained in Exhibit No. 4, mail and express earnings have been assigned to Arkansas. Now, in Exhibit No. 12, following the various preceding steps, we have set aside the mail and express expenses." (R. 84.)

Mr. Nay testified:

"Q. In making the division between freight and passenger you spoke of a moment ago, what did you do with 'mail and express?'

A. When we got the passenger proportion separated, we then set aside from the passenger expenses a car foot mile proportion, as representing the expense applicable to mail and express.

Q. Why did you adopt the car foot mile as a unit for making that division?

A. In my mind, there were two reasons: The first is, that it is about the only common factor between mail, express and the other portions of the passenger service. And then the United States Postoffice Department had adopted the basis in an investigation they made some years ago to determine the cost of carrying the mail on trains. They went into the matter very thoroughly at that time, and the railroad com-

panies all prepared data showing the car foot mile proportion. And my information is that that basis was pretty generally accepted, both by the United States Postoffice Department and by the majority of the railroads, as being fair.

Q. Is there any unit that so nearly represents the use derived from those classes of traffic, mail and express, of the facilities furnished by the Railroad Company for transportation, as the car foot mile?

A. I know of no other unit." (R. 295, 296.)

EXHIBIT 13.

This exhibit contains a division of line passenger expenses, as set forth in Exhibit No. 12 (after exclusion of mail and express), between coach service, pullman service and other passenger train cars, and between intrastate and interstate traffic on the basis prescribed in the formula at pages 25, 26 and 27. The principle upon which this division was made and the method of ascertaining and applying the car foot miles, and the ultimate assignment of the expense incident to the various classes of cars used in passenger trains to intrastate and interstate expense have been referred to, but the following testimony of Mr. Hamilton states the matter so clearly that we ask leave to insert it:

"In Exhibit No. 13, the passenger expenses, line passenger expenses, haulage passenger expenses, from which the mail and express car foot mile proportion has been eliminated, are divided, first, between coaches, pullman and other cars in the passenger trains, mail and express space excluded. That division also has been made on the basis of the car foot miles, the lineal foot space assigned to coaches and in pullman cars, and in the auxiliary cars, the baggage cars, the dining cars the observation cars and parlor cars, the proportions of which having been determined were multiplied by the miles each car ran, according to its use by passengers, or its provision for use by passengers. These car foot miles have been used to divide expenses of line passenger service, mail

and express excluded, between coach service, pullman service and the auxiliary car service in passenger trains.

Q. Auxiliary car service includes what?

A. Baggage cars, dining cars and observation cars.

I want to call attention to one item in Exhibit No. 13; the first column of the exhibit after the reference to the pages of the formula shows the total line passenger expense. Under the head of 'Maintenance of Equipment'—maintenance of locomotives—that total line passenger expense is divided between coaches, pullman cars and other cars. The per cents representing the car foot mile proportions are shown at the head of the column, but in the case of passenger train cars it will be noted that no allotment is made of that expense to pullman cars, repair expenses of passenger train cars being divided between coaches and other auxiliary cars in trains, excluding the pullman. That is for the reason that the company does not make any repairs of pullman cars, except, however, accident repairs, and there are none of that character within this particular period.

The Court: Q. You mean under its contract the Pullman Company does its own repairing?

A. Yes. As a matter of fact, we may actually do the work, but we render a bill for our reimbursement. They stand the cost, they bear the cost. If we demolish a car in an accident we replace it, unless that accident be due to a defect in the car itself.

This exhibit shows for each division the percentages and bases on which it was made. After dividing the expenses between the coaches, pullman cars and the auxiliary cars, the coach expenses, taken separately, are divided between intrastate and interstate on the basis of the passengers one mile who rode in coaches. That is an actual statement of the passenger travel in coaches for the two months.

It might, perhaps, be well to digress there and explain how the coach passenger miles and pullman passenger miles are obtained separately.

The Court: Q. You charge up the expenses of each mile regardless of the number of passengers, and disregard the space of coach—

A. We first made the division between coaches and pullmans and auxiliary cars—

Q. No, I mean in charging up the expenses you say a 'passenger mile' regardless of whether the coaches are full, or whether there are only a few passengers?

A. Yes, sir; because the number of passengers who ride one mile in those coaches, state and interstate, indicate the use made of those coaches, and, of course, the expense should be spread over each item of that use, be it large or small, in total.

Q. Is there not a greater expense if you carry ten passengers to a coach, only, than if you carry twenty-five?

A. Not in the train expense, sir; not in the line passenger expense, because it costs you no more to haul a full coach, as far as the haulage expense—

Q. I mean, in proportion to the revenue—

A. I haven't considered the revenue at all; this is a question of the use made of those coaches." (R. 84, 85.)

EXHIBIT 14.

The total line freight expense for the test period, having been ascertained in Exhibit No. 9 and charged with its proportion of the expense of the non-revenue service in Exhibit No. 11, is apportioned in this exhibit between local and through trains (the freight proportion of mixed trains being included in local trains) and the expense of each class of train is then divided between intrastate and interstate traffic in proportion to the net ton miles of each class transported in said trains, respectively.

It is a well known fact, accepted on all hands, that in the operation of American railroads, local freight trains are

more costly to operate per train mile for transportation expenses than through freight trains. The local freight train is manned by a crew numerically larger than that of the through freight train, performs all of the station work of loading and unloading freight, picking up and setting out cars at intermediate stations between district terminals; is a longer time upon the road in accomplishing a given mileage than the through freight train, all of which adds materially to the cost of operation per train mile. Further, the local freight train carries less tons of freight per train mile than the through freight train, which operates to make the cost of transporting a ton one mile on the local freight train greater than the cost of transporting a ton one mile on the through freight train. The evidence in this case has shown that the proportions of intrastate and interstate freight carried upon the local trains are different from the proportion of those two classes of freight carried upon the through trains. It has, therefore, been considered proper in arriving at the cost of intrastate and interstate freight business respectively, to segregate first the cost of operating the through and local freight trains and then to subdivide such cost between intrastate and interstate traffic in proportion to the volume (ton miles) of intrastate and interstate freight carried upon each class of train considered separately.

This exhibit contains the result of the methods adopted under Exhibit No. 1 for separating and determining the expense of operating local and through freight trains, and the ascertainment of the amount of intrastate and interstate freight traffic carried on each class of trains. Under the meth-

ods heretofore used these divisions could not, or at least were not, ascertained with any degree of certainty, but rested largely on estimates made by operating officials. An effort was made in the Arkansas Rate cases (230 U. S. 553) to arrive at a proper division of expenses between local and through trains, and to determine the intrastate and interstate contents of each class of train, referring to which the court, after saying that the ultimate conclusion as to the returns from the business must depend upon the certainty of the proof with respect to the segregation of the results of intrastate operations, found that while the figures and calculations in the cases represented a serious effort to effect a reasonable apportionment, there was not enough data upon which to compute the extra cost of intrastate transportation with sufficient certainty. The court say at page 559:

"The controlling factors, used in the computations, represent general estimates of the conditions of transportation, which may or may not be accurate, and there was an absence of satisfactory evidence, to take the place of the rejected tests, giving with requisite particularity the actual movement of traffic at the times in question, and affording a proper basis for the determination of relative cost."

In this case an attempt has been made to cure the defects in the proof referred to by the court. The calculations upon which the divisions of expense contained in the exhibits in this case are made, are based on the information obtained in the manner provided in Exhibits 2, 2-A to 2-K and 3, in which the history of the movement and the contents of every through train, every local train and every mixed train is given in detail and with as complete accuracy as is attainable by the employees and officials engaged in operating the trains, with the assistance of men specially detailed to supervise and

assist in the work and see that the records were properly kept, and the results of whose labors were compared and checked by the way-bills and other records regularly kept by the company, by which the certainty of proof required in the segregation of the results referred to by the court was obtained as nearly, we submit, as is practicable through human agency, not only with reference to the movements of the trains and the cost thereof, but also as to the amounts of intrastate and interstate traffic that move on them. On this subject we call attention to the testimony of Mr. Hamilton and Mr. Nay.

Mr. Hamilton testified:

"In Exhibit No. 14 is taken up the division of line freight expenses between the intrastate and interstate traffic. It is first necessary to divide the expense between the local and the through train, the freight proportion of the mixed train being combined with the locals, because that is nothing but a local train with a coach on the end of it. The actual assignment—the actual allocation of expenses between local and through freight trains was made of such items as directly attach themselves to those respective classes of trains. Wages, for instance, of enginemen and trainmen were actually allocated, taken from the company's payrolls and time slips for these two months. The fuel for road locomotives was actually charged out to the local and through trains.

Mr. Moore: Q. That is for each train, on each run?

A. Yes; I was coming to that. It was not necessary to make any special test to charge out the fuel, as was done in the Cotton Belt case and applied on assumption to the Iron Mountain, for the Frisco for a number of years has conducted a fuel economy campaign, in doing which it keeps records of the coal issued, in tons, to every engine on every class of train, upon every trip. We didn't have to make any special test to get the fuel charges to local and through trains; we already had it. In fact, we keep a great many separate statistics as to local and through trains for our own regular daily information. This is one of them. There is no assumption in that figure and no bringing over of the test on another road; it is

our own actual coal issues to these two classes of trains and against which the fuel agent balances out his stock of coal and accounts to the auditor for it. In the main, such expenses as could not be actually allocated to local and through trains were divided between them on the basis of the gross ton miles in each class of train. That is, the entire weight of the train from the pilot of the engine to the rear platform of the caboose, including the contents of all the cars and including the average loading of the engine's tank or tender with fuel and water. The theory of that was this: We have here the line expense, as previously determined, the haulage expense chargeable to freight service. The use made of the property in incurring that expense is reflected in the trains which moved over the property. The proportionate use was reflected by the size of the train and the best index we could find of size was weight. We took the weight of the entire train from end to end, and its contents, even the contents of the engine in fuel and water. Some items were not divided on a gross ton mile basis. Some were actually located. Some depended on other divisions, as, for instance, the operation of fuel stations was divided on the basis of the charge-out of fuel. That is an actuality, in reality, because the coal is charged out at an average price for the entire railroad, and the money charged for fuel is in reality directly translatable into tonnage, and surely there could be no better division of the expense of operating the fuel stations than the number of tons of coal that are delivered at those stations to local and through trains. That is the division that has been made.

The water expense for freight road locomotives has followed the fuel division, for the reason that a pound of coal burned in the firebox of a local freight engine will evaporate just as much water as a pound of coal burned in the firebox of a through train engine. The water consumption directly follows the fuel.

Aside from that, and the actual allocation of wages and fuel, the expenses have been divided between the local and through trains on the basis of the gross ton mile, actual. How those gross ton miles were obtained is explained in Exhibit No. 2. Having, then, the local train expense and the through train expense, the division of the local train expense was made between intrastate and interstate business on the basis of the net ton mile contents of the cars carried on local trains. That was determined as the result of an actual test, as described in Exhibit No. 2.

The same is true of the through train. We did not get the figures for the local train and deduct them from some total which was already of record and say that the balance was the through train, as was done in the Iron Mountain case, of necessity, because the State did not have the through train performance and could not get it at that time, but we also actually analyzed the through trains just as thoroughly as we did the locals, and there was no process of deduction here. This is an actual analysis. That covers the division of line freight expenses between state and interstate traffic through the medium of the division between local and through trains." (R. 86, 87, 88.)

Mr. Nay testified at page 315: "The Frisco, in this case, has carried the 'line' freight expenses through to a conclusion as between local and through trains," and then have divided the expenses so subdivided, between local and through trains on the basis of the net ton miles in the respective trains, as between state and interstate.

That is the underlying principle all the way through, just as they had one principle which went through the division of 'line passenger' expenses. There it was separated between sleeping cars, day coaches and other cars, mail and express. Here the separation is between local freight and through freight; and practically the same principle that was applied to the 'passenger' is here applied, except that in the passenger it was applied to different sections of the trains, and in this case it is applied to different classes of trains, the local and the through.

I think that gives the principles, Judge Moore, and I think they are right. I think they are such as will produce the right conclusions, and get away from the increased cost estimate we used to have." (R. 316.)

EXHIBIT 15.

In this exhibit a division is made of terminal freight expense between intrastate and interstate traffic. Like Exhibit No. 14, it is based on Exhibits 9 and 11—the parts of said exhibits which relate to terminal freight expense. The following extract from the testimony of T. A. Hamilton will explain the basis of facts upon which the divisions are made:

"This division has not been made, as was done in the Iron Mountain case, where the Interstate Commerce Commission's grouping of station expenses was divided on the basis of the state tons multiplied by two, and the interstate tons charged with one terminal, and that in the lump, for the State. The station portion of this terminal expense has been divided on the basis of the actual tonnage handled in and out of each individual station during the two months. In the Iron Mountain case the yard expense (a portion of which is found in this terminal expense) was divided on the basis of cars handled. The division here has been upon the basis of cars received and forwarded, but not in total for the State. Each individual yard was treated separately, and the expense of that yard treated separately, so there was no over-burdening or mis-distribution by reason of lumping all of the yards in the State and all of the cars handled in the State. The local condition of each yard is reflected in this detail division.

But there is more in this terminal expense than what is ordinarily known as station and yard service. In former cases there has always been a great deal of controversy as to how much switching the local freight train did on its journey each day. That has been a matter of assumption and conjecture. Here, for two months, we found out actually how much time each local freight train in this State switched, each local freight train on the Frisco in this State. We know how much time it devoted to switching and loading and unloading freight at each station every time every train stopped. We know how long it stopped for other purposes, such as taking coal and water, meeting and passing trains, or getting orders. That latter class of time has been charged to line service, because it is necessary for the running of the train over the road, not for the station delivery or receipt of freight. We have segregated the actual performance of these local and through trains and found out how much time they devoted to this terminal service, and we have divided that expense on the basis of that time. Heretofore there has always been buried in the case of both the local train and through train this item of expense. or element of expense, which had nothing to do with the moving of that train over the road. These are not haulage costs, but are really terminal costs. In fact, the local freight train supplants the switch engine when it stops and works at a station for an extended period, a greater or shorter length of time, and that really is a yard function, a terminal function. It simply does that as a matter of economy and expe-

diency to avoid keeping a switch engine there. We have analyzed that time, and have charged the station service time, the terminal time, to terminal service. It has not been buried in the haulage cost and charged to each ton mile alike, but it has been located to that station and charged to the tons that were handled at that station, state or interstate. That explains one of the vital differences in the method heretofore followed and the method that has been followed in these exhibits. This terminal cost that we are analyzing has been built up in that way." (R. 88, 89.)

Mr. Nay also testified on this subject in which he made an explanation from his viewpoint of the propriety of this division, as follows:

"*Mr. Moore:* Q. Will you now go to the apportionment of terminal freight between interstate and intrastate? I think you will find that on page 34.

A. Here the basis throughout is to divide these terminal freight expenses on the basis of the tons, in some cases net and in some cases gross tons, that use the terminal facilities.

Take accounts 2 to 10, which are the tracks and which are used by the cars containing the freight; that apportionment between intrastate and interstate is on the basis of gross tons of loaded cars handled on those tracks. And it seems to me no fairer basis could be used.

When we come to 'buildings, platforms,' where the less-than-carload freight is handled, the division is on the basis of the net tons; so all the way through this division. The apportionment between intrastate and interstate is on the basis of the tons that use the facilities—or on the use basis.

Of course, there are certain accounts in here like 'superintendence' again, that are overhead expenses and are divided on the basis of other accounts. But still that is just the same as the use basis. They are divided on the basis of direct expenses, the latter having been apportioned on the use basis. That runs all the way through this section of the formula.

Q. And what you said covers 'maintenance of equipment' as well?

A. Yes, sir.

Q. On page 35, the 'Transportation expenses' are treated. The word 'consignments' is used in some instances there, is it not? Such as in 'Station employees,' Account No. 63.

A. Yes, sir. I forgot to mention that. The expenses of employes in the station are divided on the basis of the number of consignments—that is, the number of shipments—which is an entirely proper basis because it very frequently happens that one way-bill—a so-called 'blanket' way-bill—will cover a number of shipments or consignments, and there will be practically the same amount of work in connection with each consignment as if separate way-bills had been made for each consignment. In fact, there are some railroads in the east and southeast which are making a separate way-bill for each consignment. The division on those roads would be on the basis of the number of way-bills.

Q. To what class of employees does that refer?

A. That refers to clerical expense, the clerks or the man who makes the way-bills, and records them at destination. A separate freight bill must be made for each consignment. A blanket way-bill may cover fifteen consignments, consigned to fifteen different firms or persons in a city; and a separate freight bill must be made for each one, notwithstanding the fact that that was all covered by one way-bill and all moved in one car.

Another item I should have mentioned, that is not apportioned on the basis of the tons, is the 'terminal yard' expense. That is based on the respective number of state and interstate cars of freight received and forwarded. And the cars that contain both state and interstate freight are counted one-half a car to each class.

This is on the theory that it costs substantially the same for terminal service for all the state cars—that is, the same average for all of the state cars and for all of the interstate cars, regardless of the fact that one may contain forty tons of freight and the other five tons of freight.

This refers only to the 'yard' expenses, the switching and placing of cars.

Q. There are different classes of employees, or rather employees who discharge each class of service in the station and terminals?

A. Yes, sir.

Q. Their expense, I suppose, is assigned in accordance with the class of service rendered?

A. Yes, sir. For example, if there is a station where the agent is also a ticket agent, he has a ticket clerk or ticket seller, the wages of that ticket clerk would be assigned to 'passenger' and 'passenger terminal.' Then his wages would be assigned between intrastate and interstate according to the number of passengers at that station.

And if he were a way-bill clerk, it would be assigned to 'freight' or to 'terminal freight expenses' and be divided on the basis of the number of consignments handled at that station.

So, all the way through, each employee is assigned to the character of service he performs—or, assigned to the expense incurred by the service he performs.

Q. The difference in the method you have just described, and that pursued by the State in preparing its exhibits in the Iron Mountain case, is that all expenses were lumped without discrimination and then divided on a tonnage basis, is it not?

A. Yes, sir. And I have been impressed with the fact that those men had the same end in view that we have in this new formula, except they attempted to reach that end by arbitrarily adding to the mileage 50 per cent to local mileage and switching, counting engine equipment as two and one-half cars, to equate their factors, etc. While in this formula we have attempted to go right to the expense, without any equation of factors, and get at the actual expenses just as nearly as it was possible to do so.

Q. This formula is based on the detailed analysis of the different classes of service rendered and the expense incident to that class?

A. Yes, sir; it is.

Q. And that was lacking in the other method?

A. Yes, sir. This is a very expensive formula to prepare and it may be that the expense deterred all of us from going into the detailed analysis as we have done in this instance.

And then, there is another feature. In this formula the statistics that were necessary for making the apportionment have been gathered currently as the business was going on. It was impossible to gather those statistics on past business; that is, it is impossible for us now to go back to 1912 and gather statistics similar to these covered in November and December, 1913, because the records do not disclose the different details.

It is necessary to organize your force and tabulate these figures currently as the business is moving. And unless the statistics were kept in such elaborate detail all the time the expense of which would make it prohibitive, it would be impossible to go back and compile the data for any prior period." (R. 317-320.)

EXHIBIT 16.

This exhibit contains a division of terminal passenger expense (after the exclusion of mail and express proportion, as set forth in Exhibit No. 12), between intrastate and interstate traffic on the basis of the formula (pp. 31, 32 and 33). In connection with the exhibit we call attention to the following statement from the testimony of Mr. Nay:

"The same theory runs all through the division of the passenger terminal expense; that is, after segregating mail and express, the passenger proportion is divided on the basis of the passengers using the facilities. Not the passengers one mile here, because these are terminal expenses and the passenger who travels ten miles makes substantially the same use of the terminal as the passenger who travels 100 miles. The basis of the number of passengers getting on or off the train and using the station or other facilities, I think is the proper basis for division. I think the formula speaks for

itself. That same principle is used all the way through." (R. 317.)

It will be observed that the division of terminal expenses in this exhibit, as well as in Exhibit 15 dividing freight terminal expense, has been made on different bases. The factors used are shown at the head of the respective columns of each exhibit.

EXHIBIT 17.

This exhibit brings together and consolidates the expense incurred in each of the several branches of the revenue-producing freight and passenger service, as developed in the preceding exhibits by the application of the results of the test to the traffic actually conducted in each branch of the service in the State during the test period, thereby obtaining the unit of cost per ton mile and per passenger mile of the intrastate and interstate freight and passenger business, respectively, and establishing the cost relation between the intrastate and interstate branches of the two classes of traffic. It may conduce to a better understanding if we attempt to explain the manner in which the exhibit was made up. The exhibits which precede it, and accompanying explanations, describe in some detail how the expenses of November and December, 1913, were assigned to the State, and divided between line and terminal, freight and passenger, the non-revenue service adjusted, and the expense of mail and express traffic excluded from the passenger expenses. Following that the division between intrastate and interstate traffic of the freight and passenger, line and terminal expenses, respectively, is explained. The final results of these divisions are shown separately in

Exhibits 13, 14, 15 and 16. Now in Exhibit 17 the results of all these divisions have been assembled and the total intrastate passenger expense, line and terminal, added together, the total intrastate freight expense, line and terminal, added together, and so with the interstate, line and terminal, freight and passenger, and the total cost of each class of traffic shown. There is then shown the number of passengers one mile and tons one mile, intrastate and interstate, separately. The intrastate passengers one mile are divided into the total intrastate passenger expenses shown on the exhibit, and by this process the operating expenses per passenger mile for intrastate passenger traffic has been determined. The same process is followed with the interstate, the interstate passenger miles being divided into the interstate passenger operating expenses and the cost per interstate passenger mile ascertained. The exhibit then shows the relation between these two costs per passenger mile, and that the intrastate cost per passenger mile was 15.43 per cent in excess of the passenger mile cost of the interstate.

The same process is followed with respect to the freight, the tons one mile of each class, intrastate and interstate separately, being divided into the total operating expenses of each class of freight. The operating expenses per ton mile of each class is thus obtained and the exhibit shows the relationship of these ton mile costs, which is that the intrastate exceeds the interstate by 319.58 per cent.

In former rate cases it has been conceded by all parties that there is an excess cost incident to the conduct of intrastate business, both freight and passenger, over interstate

traffic. What this extra cost was in amount has heretofore rested upon expert opinion evidence. In the Arkansas Rate cases, reported in 230 U. S., the accountants for the State did, as heretofore mentioned, attempt in a crude way to work out this extra cost. Their work, however, was predicated almost entirely on assumptions, and, owing to their restricted facilities for gathering data, did not go very far into the details of operation. In the investigation, which has been referred to in this case as a test period, covering the months of November and December, 1913, the effort has been to work out the extra cost of intrastate traffic through a first-hand analysis of operating conditions conducted concurrently with the practical every-day operation of the railroad, the final results of which are shown in this exhibit.

Having determined the cost relationship of the intrastate to the interstate traffic, we will now endeavor to explain to the court how they have been applied to the division of expenses between the intrastate and interstate freight and passenger separately in the entire year ending June 30, 1913.

EXHIBIT 21.

This exhibit, as the heading indicates, contains an apportionment of operating expenses to the State, and the division of such expenses between freight and passenger, intrastate and interstate, mail and express, for the fiscal year ended June 30, 1913.

It sets forth in detail the application to the operating expenses for the fiscal year ending June 30, 1913, in their division between the intrastate and the interstate, of the per-

centages of excess cost of the intrastate business determined in the test conducted in November and December, 1913, shown in Exhibit No. 17. The following statement copied from page 1 of the exhibit will serve to explain how the application was made:

"The operating expenses assignable to the State of Arkansas for the year ending June 30, 1913, and the division thereof between freight and passenger service, were determined in accordance with the provisions of the formula filed as Exhibit No. 1, and the modifications thereof, as set forth therein, adopted by the St. Louis and San Francisco Railroad. (See also explanatory Exhibits Nos. 2 and 3.)

"One exception made in following the basis laid down in Exhibit No. 1 (as modified) was in the adjustment, between the various classes of service, of the non-revenue service costs. The principle laid down in the formula was followed, but the adjustment of the non-revenue service costs for the year, was made on the basis of the similar adjustment for the months of November and December, 1913, as set forth in Exhibits Nos. 10 and 11. That is to say, the percentage of burden or relief on account of non-revenue service performed by one revenue service for the other in November and December, 1913, was applied in making the adjustment of non-revenue service costs in the operating expenses of the year ending June 30, 1913.

"Another exception, in detail but not in principle, was that the passenger operating expenses in the five Interstate Commerce Commission groups under the heads of Maintenance of Way and Structures, Maintenance of Equipment, Traffic Expenses, Transportation Expenses and General Expenses, determined as hereinbefore set forth, for the year ended June 30, 1913, were divided between passenger, and mail and express on the basis of the relative percentages of car foot miles in mail and express and passenger carrying service, as determined for the months of November and December, 1913.

"The proportion of passenger expenses chargeable to passenger carrying service (after elimination of mail and express proportion) was divided between intrastate and interstate passenger traffic on basis of the respective passenger

miles of each class for the year ending June 30, 1913, there being added, however, to the intrastate passenger miles 15.43 per cent, in arriving at factors for this division, this percentage representing the excess cost per passenger mile of intrastate passenger traffic over interstate passenger traffic, for all passenger operating expenses in the months of November and December, 1913, as set forth in Exhibit No. 17.

"The freight proportion of operating expenses, determined as hereinbefore set forth, was divided between intrastate and interstate on basis of the respective ton miles of each class for the year ended June 30, 1913, there being added, however, to the intrastate ton miles, in arriving at factors for this division, 319.58 per cent, this percentage representing the excess cost per ton mile of intrastate freight traffic over interstate freight traffic, for all freight operating expenses in the months of November and December, 1913, as set forth in Exhibit No. 17."

In order that there may be no misunderstanding, we here call attention to the fact that the expenses appertaining to the total business in the State were actually allocated and assigned to the State by an analysis of the records of the company for the entire fiscal year, proceeding on the basis laid down in the formula filed as Exhibit No. 1. These actual State expenses for the fiscal year were divided between the freight and passenger services in detail for the entire year, the factors developed in the test period being applied to that division between freight and passenger only insofar as the adjustment of the non-revenue service costs between freight and passengers were concerned. This is set out in a note to page 2 of the exhibit.

In dividing the passenger expenses for the year between passenger and mail and express, the car foot mile percentages of the two months test period were applied, which is also shown in a note to page 2 of the exhibit. With these two exceptions

the expenses of the fiscal year were allocated to the State and divided between the freight and passenger services in detail in accordance with the provisions of the formula.

In dividing the freight and passenger expenses between intrastate and interstate for the year ended June 30, 1913, the actual intrastate and interstate passenger miles and ton miles of that year were used as factors, with the addition to the intrastate ton miles and passenger miles of the extra cost percentages developed as shown in Exhibit No. 17. These divisions between the intrastate and interstate business are set forth in detail in Exhibit No. 21, and the resultant figures of operating expenses chargeable separately to intrastate and interstate freight and passenger carried directly into the income account statement for the fiscal year which appears in Exhibit No. 22.

EXHIBIT 22.

This exhibit shows in detail the earnings and expenses, taxes, rental and hire of equipment upon each class of business conducted by the Railroad Company within the State of Arkansas for the fiscal year 1913, as ascertained in preceding exhibits which are referred to by number, and shows the net income derived from each class of business available as a return on the value of the property employed in each class of service, after deducting from the total operating revenues the operating expenses, State and Federal taxes, net rental and hire of equipment, and then shows the percentage of return yielded in each class of the business. The method used in dividing taxes, rental and hire of equipment, has been explained in connection with Exhibit 5.

The earnings are not based on the inhibited passenger and freight rates. After the injunction was granted, the Railroad Company reinstated the rate of three cents per mile that had been in effect before the Act of February 9, 1907, prescribing a rate of two cents per mile, and that rate was enforced during the entire fiscal year 1913. It also put into effect a schedule of freight rates higher than those prescribed in Standard Freight Distance Tariff No. 3, which was later modified under an order of the court and a schedule of freight rates put in which was designated and commonly known as the "Court Rates," and was in force during the fiscal year 1913. This is referred to in a note at the bottom of the exhibit, and the diminution in revenues upon the application of the inhibited rates to the business of the year, and the balance then available as a return on the value of the property, are set out, with the result that the net earnings on the intrastate freight business of the year, under the enjoined rates, would have been $800.15, and there would have been a loss on the intrastate passenger business of $65,428.85, and a loss on the freight and passenger combined of $64,628.70.

Exhibit 33 contains a statement of the rates in force at different periods during the time covered by the exhibits. (See appendix, p. 272.)

APPORTIONMENT OF PROPERTY VALUE.

The total value of the property used in operation within the State is agreed on in the stipulation at page 906 of the printed record. The testimony of F. G. Jonah, the chief engineer of the railroad, and other witnesses familiar with the property, was taken prior to the agreement, and the results of

the evidence are embodied in Exhibit No. 18, which also contains a distribution of the value among the various classes of traffic. The agreed valuation is less than that of the chief engineer, and scales it down horizontally to an amount which is 73.24 per cent of the value as shown in said exhibit. The reduction does not disturb the proportions of value assigned in Exhibit 18.

The apportionment was made in compliance with the rules prescribed in the formula, page 38, 38-A, 39 and 39-A. The apportionment thus made follows the division of operating expenses, and is explained in the testimony of T. A. Hamilton at pages 249 and 446.

"As I have stated, we divide the value of the property on the basis of the division of operating expenses, not in a lump, but, as Exhibit No. 18 shows, each class of property separately.

The reason for that is this: We have assumed here and think we have succeeded in dividing our expenses on the basis of the use made of the property. If that is true, then the results of our division of the expenses reflects the use, and we have used those results to divide the property on the use basis in accordance with what we understood to be the Minnesota decision.

Take Exhibit No. 18 as a text: We divided the property there, the roadway and structures—it is all set forth in the exhibit, but I will state it briefly—on the basis of the assignment of transportation expenses. That reflects the money spent in using, in a large measure, the roadway and structures in running trains over it and hauling traffic.

So we felt that the transportation expense division, which we think has been made upon the basis of the use made of the property, might fairly be used to divide the roadway and structure value.

Then as to locomotive equipment, we divided that upon the basis of locomotive repair expenses, which we felt had

been divided, through these various steps and ultimately between state and interstate, freight and passenger, on the basis of the use made of the locomotives.

We followed the same plan for passenger cars and freight cars. I think there was one exception there where we could assign direct, and that was some mail cranes, masts and arms, for taking mail onto a moving train, and we charged those direct to the mail. That is the theory on which that was handled. (R. 249, 250.)

"Judge Hill asked me why I had made my line division of property on the basis of transportation expenses and not upon the engine ton mile which I had used to divide the maintenance of way expenses. As a matter of fact, I thought that the maintenance of way expenses themselves, in this period, might or might not be reflective as between line and terminal. I know that the transportation use of the property, in a broad sense, was full every day in the year and, therefore, used that.

Following Judge Hill's suggestion we re-worked those figures using the engine ton mile division. I have not prepared them in the form of an exhibit, but I have the effect of it here and have all the detail papers, which I will be glad to submit to the accountants for the State. I can make an exhibit out of it if desired, but I have not had the opportunity as yet.

I have made the apportionment of line values on the engine ton mile basis, as suggested by Judge Hill, and, taking the year ended June 30, 1913, as an example—we had time only to work up one of the years—I found the concrete effect of it is to reduce the value of property assigned to intrastate freight, 19 per cent; to increase the value of property assigned to intrastate passenger, 18 per cent, and to make little or no change in the total intrastate values.

Carried with that change in the value of property is a change in the apportionment of taxes. which also goes to affect the return upon the various classes of intrastate business. The concrete result of the change, applied to Exhibit No. 22, is to change the return on intrastate freight from 1.07 per cent to .23 per cent—that is, 23/100 of 1 per cent—to eliminate entirely the return of almost 2 per cent on intrastate passenger, and to leave the return upon the total intrastate business so small that you can not find it with a miscroscope.

So, really, the engine ton mile basis makes no vital difference in our figures. I might have used it; I believe in it, but for the reason stated, I used the transportation expense. I have heard a great deal of commendation among railroad men of the revenue train mile. I have not worked that out here, but I believe the engine ton mile is, perhaps, a more reflective basis. If applied the other might show somewhat similar results.

Summing up the whole proposition, the change that we would make in our Exhibit No. 22 would still leave us a deficit of $32,000 on our total intrastate business. Of course, that is not affected by the change in the property values on the engine ton mile basis of distribution except as it switches the taxes a little bit, and that is a negligible change. We still have not sufficient to pay expenses and taxes on the face of this exhibit, so really the property value division becomes immaterial." (R. 446, 447.)

The exhibits for the separate years in this case show that the earnings on the basis of the inhibited freight and passenger rates are not sufficient, in any of the years covered by the investigation, to pay the expense of operation, except that in the fiscal year 1910 there was a net earning on intrastate freight traffic of 0.064 per cent. The matter of the valuation, therefore, ceases to be of any particular importance in this case.

Exhibit 61, which shows the average earnings of the four years, 1910 to 1913 inclusive, and in which the Kansas City, Fort Scott & Memphis Railway rental charge is eliminated and the stipulated value of the property used, shows a return on the intrastate freight business in the year 1910 of 32/100 per cent; 1913, 31/100 per cent, and a deficit in each of the other years. For the intrastate passenger business, it shows a deficit in each one of the years, except in 1911, which shows an earning of 1.26 per cent, and on the total intrastate earn-

ings, freight and passenger combined, a deficit is shown in each of the years.

EARNINGS AND EXPENSES DURING THE FISCAL YEARS 1912, 1911, 1910, AND FOR THE MONTHS OF SEPTEMBER, OCTOBER, NOVEMBER AND DECEMBER, 1907—

EXHIBIT 23.—THE EQUATING PROCESS.

It was deemed advisable to determine the effect of the inhibited rates on the earnings of the property during the preceding periods. It was impracticable to go back and make the same detailed analysis of the business as was made for the fiscal year 1913, and it was unnecessary to do so, for the Railroad Company, in making its reports to the State Railroad Commission after the year 1909, had made an assignment to the State upon a uniform basis, or formula, which it used in the year 1913, and is still using. It also had a formula which it used to divide expenses between freight and passenger service for its own operating comparisons. It had the result of the application of the old formulae (sometimes referred to as the Douglass formula), to the earnings and expenses in the State, and the earnings and expenses of the system in assigning them to the State, for the fiscal year 1913. It also worked up the result of the application of the new formula to the business of that year in minute detail account by account. It was found that the result of the application of the new formula to the earnings and expenses bore a certain relation to the result of the application of the old formulae. Thus a given assignment of earnings and expenses to the State under the new formula would be, say, 98 per cent or 102 per cent of what is

reported to the State Railroad Commission, under the old formula, and so on throughout the various divisions of the State traffic.

The comparison of the two formulae and the equating of the results obtained under the old formula in former years was equivalent, in effect, to going back and working up those years in detail on the basis of the new formula, and the relationship of the two formulae could be expressed in percentages.

The method pursued in making these equations is explained in Exhibit 23, pages 1 and 2, and the results of the application of the old and the new formulae in the assignment of the various classes of earnings to the State, in the assignment of operating expenses, freight and passenger, to the State, and the apportionment of expenses assigned to the State between freight and passenger business under the old and the new formula, expressed in percentages, are shown on the succeeding pages of the exhibit, which is printed in the appendix, page 246. We think the explanations contained in the exhibit in connection with the testimony of the witnesses Hamilton and Nay, at pages 103 and 332 of the record, will convey a clear understanding of the plan followed in making the equation and its effect. Referring to this subject, Mr. Nay testified:

"I understand that they took the earnings or revenue, first; that they were redivided on the basis of this new formula and compared with the original results arrived at by the auditor.

For the entire year 1913, and it was found that the results under the new formula, in each item of the earnings, was a certain percentage of the results under the old formula,

and then those percentages were applied to the earnings of 1912, 1911, 1910, and the four months of 1907. Take the freight earnings: It is shown here that the percentage under the two formulas was 100.82 per cent interstate, and 100 per cent even intrastate. Of course, there would be no difference in the intrastate.

It was assumed that the difference between the results of the two formulas would be the same percentage in prior years, and I think it is a fair assumption that if the figures had been worked out in detail it would produce substantially the same result. There might, perhaps, be a difference of a few dollars due to the fractions, but the results produced by that equation are right.

Q. Is that a correct principle of cost accounting?

A. Yes, sir; and it would not matter if the old formula was wrong, the relations between it and the new formula would remain the same. It would always be the same, whether it applied to one year's business or another.

Q. The equating would overcome any error that might exist in the formula as used in previous years?

A. It would if the new formula is correct, and I believe the new one is correct. What I meant is the equation would reduce the figures of the former years to the basis of the formula now before us, and that is true of operating expenses as well as of earnings. I understand that a similar method was followed in connection with operating expenses: That it was found that under the new formula the operating expenses were so much; under the old formula they were so much, and the relation of each one of the five classifications—maintenance of way and structures; maintenance of equipment, traffic expenses, transportation expenses and general expenses was found, and then that same relation was applied to those five general headings of operating expenses for the previous years.

A. I think that is a fair and accurate method of reducing those earnings and expenses to the basis of the new formula. Of course, as I said before, if they were worked out in detail, the results would probably be a few dollars different one way or the other, but they would not be substantially different." (R. 332, 333.)

The relationship employed in the processes of equation described, based upon the complete application of both the old and new formulae, in the year 1913, is set out in detail in the figures contained in Exhibit No. 23, and the percentage relations thus established are applied in Exhibits 24, 25, 26 and 27-A to the earnings and expenses for the preceding years. The percentages thus applied are shown on pages 3 and 4 of Exhibit 23. Ninety-eight per cent of the intrastate earnings, consisting of freight revenue, passenger revenue and special service train revenue, was susceptible of actual allocation so that the process of equation was only applied to 2 per cent of the earnings.

EXHIBIT 24.

We will now call attention for a moment to Exhibit 24, where the application of the method of equating is made to the business of the fiscal year 1912. It contains a complete statement of earnings and expenses in the State of Arkansas, apportioned as between the various classes of traffic. The first matter treated of is the apportionment of taxes. These are the actual taxes accrued in that year, and are apportioned on the basis of the division of property values, in the same manner as in the year 1913, as has been explained. It also shows the division of the actual rents, both charges and credits, for the year 1912, and the apportionment of hire of equipment charges actually incurred within the year, on the basis described in connection with Exhibit 22. On page 12 of the exhibit the equating percentages are applied, placing the earnings and expenses assigned to the State, and divided between freight and passenger and mail and express, upon the proper basis through the methods described in Exhibit No. 23.

On page 13 will be found the tables showing the equations of expenses on the bases of the percentages previously described. On page 14 these expenses, after their assignment to the State, and division between freight and passenger services in the preceding pages of the exhibit, are subdivided between intrastate and interstate, freight and passenger, separately, through the application of the percentages of extra cost intrastate over interstate, determined in 1913, to the actual intrastate ton miles and passenger miles of the year 1912. The complete results for the year are shown on page 15 in the same form as in Exhibit 22 for the year 1913. The gross revenues from intrastate freight business were insufficient by $30,692 to pay operating expenses, taxes, rentals and hire of equipment. This is shown on the face of the exhibit. But during that year the intrastate passenger traffic was on the basis of three cents a mile. Had the inhibited rate been applied, the exhibit shows that the intrastate passenger earnings would have been insufficient, by the amount of $38,078.18, to pay the expenses of the intrastate passenger business, taxes, rentals and hire of equipment, and that there would have been a deficit of $69,770.19 in the conduct of the intrastate freight and passenger business combined. In this exhibit, and in Exhibits 25, 26 and 27-A, covering the preceding periods, 98 per cent, in round figures, of intrastate revenue, and all of the taxes, rentals and hire of equipment charges, are the actual figures pertaining to those periods, and are not produced as a result of the equating process; and when we come to the division of expenses between intrastate and interstate in all of these periods, the actual ton miles and passenger miles of each period are used, with the addition of the extra cost percentages determined in 1913, so

that the equating process applies only to the assignment of 2 per cent of the revenues and to the operating expenses in their assignment to the State and in their division between freight and passenger.

Exhibit 24 is typical of the three that follows, and what has been said in regard to it is equally applicable to the others. In this connection we call attention to the following testimony of Mr. Hamilton at page 104 of the record:

"Exhibit 24 covers completely the results for the year ended June 30, 1912, arrived at on the basis which I have just described. I want to say, however, that after we got the earnings assigned to Arkansas, and had the expenses assigned to Arkansas, and divided them between freight and passenger service on the basis of this equation, we then divided them between interstate and intrastate on the basis of actual ton miles and passenger miles hauled in each of those years, state and interstate, with the same percentage of extra cost that underlies the whole thing.

In 1912, we were operating under the court tariff and on a three-cent passenger rate. On the basis of the court tariff rates, we did not earn enough to pay freight operating expenses, taxes, rentals and hire of equipment. On the basis of the three-cent passenger fare 4.34 per cent. If we had charged a flat two-cent rate, on the same volume of traffic, we would have been $38,000 short of earning our operating expenses, taxes, rentals and hire of equipment. There would have been a deficit."

At the time these exhibits, including also Exhibit No. 22, were prepared by the accountants, it was assumed that an annual rental charge paid for the Kansas City, Fort Scott & Memphis Railway, a leased line, should be included in the operating expenses, but the matter having been brought to the attention of the court during the taking of the evidence, it was held that the rental was not a proper charge, and Exhibit 28,

eliminating that charge from the expenses shown in Exhibits 22, 24, 25, 26 and 27-A and showing the effect thereof, was prepared and filed.

The equation rests upon the relationship of the results of applying the formula used by the railroad in making its reports to the State Railroad Commission, and for other purposes, and the new formula filed in this case. Mr. Hamilton, who is an expert cost accountant, as well as a man of very large experience in all branches of railroad accounting, and many branches of operation, stated of it:

"This equating process, as a matter of mathematics, is sound. I do not think anybody will dispute that. It needs only the assurance that the company's old formula results, upon which the equation rests, have been obtained upon a uniformly applied basis throughout all of the periods involved." (R. 848.)

Appellants did not contest the soundness of the principle upon which the equation is based, but attacked it collaterally, so to speak. They introduced Mr. L. N. Simson, a cost accountant, who testified that the equating method had been applied only to the sub-total classifications; that is, to the total of maintenance of equipment, maintenance of way, transportation, traffic and general expenses; that had the percentages of difference been applied to the individual Interstate Commerce accounts, the equated figure for the four months ending December 31, 1907, would have been less than the equation of subtotals by $7,397.80. (R. 612, 613.) Mr. Hamilton was examined in regard to that, and testified that he had made the equation by individual Interstate Commerce Commission accounts, as Mr. Simson suggested it should be, and adjusted the company material burden from the freight to the passenger side

in accordance with his views, and applied the per cents resulting to each individual Interstate Commerce Commission account as assigned under the old formula to freight and passenger separately. If the equation had been made of the expenses in that way in detail, instead of assigning $7,397.80 less to the State of Arkansas, it would have assigned $8,400.38 more. (R. 824.)

In applying the old formula used in the year ending June 30, 1913, to the assignment of expenses to the State, the Auditor made some clerical errors. These were discovered by the accountants for the State in the course of their examination of the railroad records, and their nature and amount were explained by Mr. Simson in the testimony in connection with Exhibit G. The examination of the records showed that the Auditor, in the assignment of expenses in the formula used by him, assigned $72,107.48 to Tennessee, which should have been assigned to Arkansas under his formula. This grew out of a clerical error in the division of the terminal expenses at Memphis in the State of Tennessee. Upon investigation Mr. Hamilton found that Mr. Simson's statement was correct. They agreed that the error made a difference in the results of the equating process of $23,080.62, and that the expenses in Arkansas for the four months ending December 31, 1907, would be reduced for freight transportation $16,977.90, and for passenger transportation $6,102.72. Mr. Hamilton further testified that he did not discover the error in the application of the old formula until it was called to his attention in connection with Exhibit G, filed by Mr. Simson. That as soon as it was discovered, he worked the mistake out through all the calculations contained in Exhibit 27-A, and the result was that after the

correction of the error, the gross earnings from intrastate business shown on that exhibit still left a deficit of $807.23 in operating expenses, with nothing to apply to the payment of taxes. (Simson, R. 610, 611; Hamilton, R. 839, 840.)

At page 614 of the record Mr. Simson referred to certain items of expense which he stated should have been added to the State of Arkansas by the auditor in addition to the Memphis terminal item, which he treats of in Exhibit G. These items are yard supplies and expenses, wages of yard conductors and brakemen, wages of station employees, station supplies and expenses, and injuries to persons. Mr. Hamilton, being recalled on this point, testified that he made an investigation of the matters about which Mr. Simson had testified, and made the following explanation of it:

"As I understood Mr. Simson's statement, it was that Mr. Douglas claimed to have made a direct allocation of certain items to the State of Arkansas, and that we did not get the same results when we made what we call a direct allocation under the new formula.

There seems to have been some misconception of what those items were.

Mr. Simson kindly loaned me his working sheets on that and I went over them. We found that they are a very large part of the same items that Mr. Simson reflects in his Exhibit G.

We will come to Exhibit G a little later, but the connection might as well be established here as not.

Exhibit G shows that in following what we term the 'old formula,' or, rather, our general auditor's regular formula for assignment to States, in the year 1913, Mr. Douglas set up part of the Memphis terminal expenses, which, on the basis of his formula, were properly chargeable to the State of Arkansas. Then, through a clerical error in his statistical department, those items were charged to Tennessee.

We, of course, based our equating percentages in 1913, in good faith, on Mr. Douglas' original assignment.

But we put that money actually into Arkansas, every dollar of it. Because we made a correct allocation.

So, then, the per cents that we obtained did not reflect the proper equation, so far as those items were concerned.

Mr. Simson shows that in his Exhibit G, which I will show later.

I find in tracing out the items which Mr. Simson mentions on those pages of the records, that they are included in the same items which appear in Exhibit G.

So our direct allocation was not so very different from Mr. Douglas'. In fact, the spirit of them was not very far apart.

There can be but one construction of that, that these were items that did not require divisional or entire line pro rate. They were practically all station and yard expenses, which would locate themselves geographically. We did not have to make a pro rate of them, except at the middle of the river at Memphis.

Mr. Douglas did directly allocate these items, but through an error of a clerk in his office, the Arkansas proportion was put in the Tennessee column. That is the whole thing in a nut shell. It is the same stuff that appears again in Exhibit G." (R. 825.)

Mr. Oliver, another accountant employed by the appellants, made the discovery that the auditor of the Railroad Company, in making the assignment of expenses for Arkansas under the formula used by him in 1907, had made certain errors in the month of September. The criticism was made that the auditor did not use the formula consistently throughout,

but used a different basis in September from that used in the following three months of that period.

The attention of Mr. Hamilton was called to it during the cross examination, and upon looking into it he testified that Mr. Oliver was correct. The matter is explained by him at page 272, and the following pages of the printed record. He was then asked what effect the correction of the clerical errors spoken of would have on the assignment of expenses to the State made by the Auditor under the old formula in the four months of 1907, and testified:

"A. The corrections of the clerical errors and the reworking of Mr. Douglas' figures to make his application of his formula in September line up with what he did in the other three months (and has done ever since down to this present date), would make the following change in the figures that we showed in our Exhibit No. 27, covering those four months.

That is to Arkansas expenses in those four months—it would add for the "Maintenance of Way and Structures," $1,525.61.

It would deduct from the Arkansas expenses—because Mr. Douglas had over-assigned to Arkansas—from "Maintenance of Equipment," $2,524.48.

It would deduct from the "Traffic expenses" charged to Arkansas by Mr. Douglas, $567.42.

It would deduct from the "Transportation expenses" assigned to Arkansas by Mr. Douglas, $46,353.06.

It would deduct from the "General expenses" charged to Arkansas by Mr. Douglas, $479.85; or a total net deduction from the Arkansas expenses, as Mr. Douglas assigned them (which we equated, of course, in our Exhibit No. 27) of $48,299.20.

Q. *By the Court*: You mean, from the entire Arkansas business, or the interstate business?

A. All the business within the State. That is just the gross assignment to Arkansas.

Q. Have you reworked Exhibit No. 27 for the purpose of showing the effect of those deductions?

A. Yes, sir; I have here Exhibit No. 27-A, which is an exact reproduction along the lines of Exhibit No. 27, with these deductions of overcharge in expenses to Arkansas.

Q. So the assignment of expenses to Arkansas on the basis of Mr. Douglas' old formula, in your exhibits covering the years ended June 30, 1913, 1912, 1911 and 1910, and the four months ended December 31, 1907, are now upon a uniform and consistent basis of division after you made the corrections in Mr. Douglas' 1907 figures, which you have explained?

A. Yes, sir; they are."

"I have gone carefully over Mr. Douglas' application of his old formula for assignment of expenses to Arkansas and scrutinized his working sheets in detail for the years ended June 30, 1913, 1912, 1911, 1910, and the four months ended December 31, 1907.

After correcting the clerical errors in the four months of 1907, and the misapplications of the formula in the one month of September, the basis of division applied by Mr. Douglas in assigning expenses to Arkansas in these years—1912, 1911 and 1910—has been in exact agreement with the basis that Mr. Douglas used, item by item, in the year ended June 30, 1913.

We have been carefully over that entire ground, and know whereof we speak.

Further, after making this deduction of $48,399.20, as reworked in Exhibit No. 27-A, the four months ended December 31, 1907, are also now, as to basis of division, in exact agreement with the methods employed by Mr. Douglas in the year ended June 30, 1913.

Q. Did I understand you to state on cross examination that in your exhibits you have not accepted Mr. Douglas' assignment of expenses to this State as properly chargeable in the various periods which are covered by these exhibits?

A. No, sir. As an academic proposition, I think Mr. Douglas' bases are wrong. They are not all use units, by any means. What we have done, however, is to determine the relation of what Mr. Douglas' formula brought in 1913 to what we got by completely reworking 1913 on a basis of our new formula, Exhibit No. 1, and when we had established that relationship we equated Mr. Douglas' assignment in the years 1912, 1911, 1910, and these four months of 1907, to a new figure on the basis of that 1913 relationship between the two formulas, and that is all explained in Exhibit No. 23.

But it does not make much difference whether Mr. Douglas divided these expenses in all these back periods by engine miles or potatoes, just so he used the potatoes consistently and used them in 1913, where we made our comparison of his results with the new formula. As a mathematical proposition, our equation is correct." (R. 274, 275, 276.)

The matter of the correctness of this proceeding was taken up by Judge Hill on cross examination of Mr. Nay. His testimony on that subject is not very long.

It will be found on pages 345, 346 of the record:

"*The Court*: I understood Mr. Hamilton's testimony to be that $48,000 was errors he found in Mr. Douglas' accounting, that which he had credited in his accounts. The $74,000 was taken out on account of the rental. But my recollection of the testimony is, and that is what I understood, that as to the $48,000 he found there had been several errors made by Mr. Douglas, which he corrected, and that made the difference.

Mr. Moore: And that correction had been agreed upon between him and the State's accountants.

The Court: He and Mr. Oliver agreed upon that.

Mr. Hill: I will ask Mr. Hamilton if this is not correct: That the total errors, in clerical errors and departures from

the formula were about $50,000, and by correcting the September data to conform to the formula, of the other three months, it would reduce that to about $48,000.

Mr. Hamilton: Yes, that is correct, and they are in Exhibit 27-A, and the equations have been made in all the exhibits applying Mr. Douglas' old formula. We have had that rechecked.

The Court: I want to get it as clear as possible.

A. There are really involved in this case three formulae, "A," "B" and "C." "A" is one of the formula which was used in 1907 for one, two or three months.

"B" is a formula used by Mr. Douglas for part of that period. "C" is a new formula which is before us today.

We want to equate for 1907 on the basis of the present formula without going through the immense detail of work which would be necessary in order to work it out item by item. So, we find, in 1913, for example, that formula "B" and formula "C" have the relation of 95 to 100 to each other. Formula "C" produces 95 per cent of the results of formula "B."

Now, when we go back to this formula which was worked out on the two formulae, if "A" and "B" are radically different, and we apply the relation which existed between "C" and "B," we get a result which is wrong, and the erroneous result will be in proportion to the difference in the formulae "A" and "B." Isn't that your question?

The Court: Yes. Or, in proportion to the errors that may be worked out. It would be the same thing, if it is an error in the formula or an error in the calculations?

A. Yes, sir. Now, if those errors are corrected, and these apportionments which were made in formula "A" are reapportioned to the basis of formula "B," and then this equation applied to that result after the corrections are made, then you have a perfectly good result.

The Court: Then you would have but two formulae; you would eliminate one?

A. Yes, you would eliminate formula "A."

The matters referred to embrace all the grounds of attack made on the method pursued in determining the earnings and expenses in the years preceding 1913 through the process of equation. All the errors in the application of the old formula were corrected and the figures reworked in Exhibit 27-A, which takes the place of original Exhibit 27, relating to the four months ending December 31, 1907. The matter is so fully explained in the testimony that further comment is unnecessary. Mr. Simson practically admitted that an adjustment of the discrepancies referred to in his evidence would produce correct results, at page 615 of the record, where he states that "all these things would have to be adjusted before any weight could be given to the equated figures." We have shown how they were adjusted and the clerical errors which occurred in the accounts in 1907, and in the assignment of the expenses of the Memphis terminal in 1913, were corrected and adjusted, so that the old formula was applied consistently in both periods and the equation made on the basis of the adjustments, and the result shown in the corrected exhibit, No. 27-A.

TEST PERIOD.

On account of the very material importance of the test made for the purpose of determining the relative cost of conducting the intrastate and interstate business of the railroad within the State of Arkansas with reference to the period covered by the test, as well as the manner of making it, we wish to call the attention of the court with some care to the evidence, and the conditions disclosed by the exhibits, bearing on the fitness of the period used for the purpose of reflecting the average condition throughout the year. This proceeding was brought on July 18 and the injunction was granted on September 3, 1908. The business and operations of the months of September, October, November and December, 1907, during which time the inhibited freight and passenger rates were in force, were used on the application for injunction for the purpose of showing the effect of those rates upon the earnings of the railroad. Other similar suits were brought at the same time, and the evidence was taken in the cases of the St. Louis, Iron Mountain & Southern Railway and the St. Louis Southwestern Railway, and those cases brought to final hearing on May 11, 1911. The evidence in this case was not taken until after the decision of those cases by the Supreme Court (Allen v. St. L., I. M. & S. Ry. Co., 230 U. S.), on June 16, 1913. The exhibits prepared in this case cover the business of the four months period in 1907, and the fiscal years 1910, 1911, 1912 and 1913. The year 1909 was not included because of the difficulty of obtaining a part of the records of that year. The manner of conducting the test we think has been sufficiently described in what has been said heretofore, and in the exhibits and testi-

mony referred to. As illustrating the thoroughness with which it was conducted, we here call attention to the fact that in the division of the terminal expense each individual station and yard in the State was treated separately, and the local condition of each yard is reflected in the details of the division, and, in the matter of switching by local trains, which has heretofore been determined by estimates and the opinions of witnesses, the actual time devoted by each local freight train to switching during the test period was ascertained. On this point we call attention to the following evidence of Mr. Hamilton:

"We know how much time it devoted to switching and loading and unloading freight at each station every time every train stopped. We know how long it stopped for other purposes, such as taking coal and water, meeting and passing trains, or getting orders. That latter class of time has been charged to line service because it is necessary for the running of the train over the road, not for the station delivery or receipt of freight. We have segregated the actual performance of these local and through trains, and found out how much time they devoted to this terminal service, and we have divided that expense on the basis of that time. Heretofore, there has always been buried in the case of both the local train and through train this item of expense, or element of expense, which had nothing to do with the moving of that train over the road. These are not haulage costs, but are really terminal costs. In fact, the local freight train supplants the switch engine when it stops and works at a station for an extended period, a greater or shorter length of time, and that really is a yard function, a terminal function. It simply does that as a matter of economy and expediency to avoid keeping a switch engine there. We have analyzed that time and have charged the station service time, the terminal time, to terminal service. It has not been buried in the haulage cost and charged to each ton mile alike, but it has been located to that station and charged to the tons that were handled at that station, state and interstate. That explains one of the vital differences in the method heretofore followed and the method that has been followed in these exhibits. This terminal cost that we are analyzing has been built up in that way." (R. 88, 89.)

We will now take up the evidence in connection with the representative character of the two months in which the test was made. A test of this character is necessarily limited in time. It can not be prolonged indefinitely on account of the very large expense involved. The important matter is the selection of a representative period in which to make the test.

On this point the testimony of Mr. Nay was taken, and, in connection with his evidence, we deem it proper to call attention to his well known character and qualification to speak on such a subject. His experience in railroad service began in 1883 as statistical clerk in the accounting department of the Missouri Pacific Railway Company; he later became traveling auditor for the St. Louis Southwestern Railway in Missouri, Arkansas and Louisiana, and later chief clerk to the general auditor of that road. For a few years he was auditor of the Minneapolis & St. Louis and the Iowa Central railroads. Since 1903 he has served with the Chicago, Rock Island & Pacific Railway Company as assistant comptroller, general auditor, and, during the last five years, comptroller of that system. He is everywhere recognized as a man of great probity of character and of unusual skill and ability, as is indicated by the station he has reached in the line of his employment in railroad service.

He testified that he thought the test period used fairly represented the conditions throughout the year for the purposes for which the test was made; that the months of November and December were fairly average months. That a similar test was made on the lines of the Chicago, Rock Island & Pacific Railway; it was first made for two months covering

September and October. The results of this test were to be used in a case pending in Oklahoma involving rates in that State. The hearing of the case was postponed, and the test continued through the months of November and December, and a comparison of the work showed that the results of the four months were not substantially different from those of the two months; that no conclusion, or element, of the two months would have been different from what it was on the basis of the four. He regarded the months of November and December, if anything, as rather favorable to the State, owing to the large movement of cotton in those months, practically all of which is interstate traffic and would add to the volume of that traffic over other periods in which but little of that commodity moved; that the tests are for the purpose of determining the relative proportions of intrastate and interstate, and through and local business, and when you cover a period of two months you have a pretty representative period in almost any part of the year, unless you select the smallest or the largest month. The test period is not an attempt to establish that the earnings are going to be more or less. Its object is to fix a cost relation between the different classes of traffic which exists in other periods. I believe that when the figures are compiled, with all the detail that is provided in this formula for a two months period, it is fairly representative of the business as it runs along from year to year, unless it could be shown that conditions entirely different existed in other periods. Of course, it would be more satisfactory if we had the results of a whole year, but it would cost probably a million dollars to do it. When we have found by actual experience that the four months result has turned out to be substantially

the same as the two months, I think I can safely say that the two months are representative. In speaking of conditions of operation and traffic which should be considered in determining the normality, or representative character of the period employed in making the test, Mr. Nay stated that there should be similarity in the following conditions:

Similarity of mileage of the road in the two or more periods.

There should be similarity in the load, or number of tons and passengers per train.

In the average length of haul of freight or passengers. If that has remained substantially the same, it would indicate a similarity in the traffic conditions.

The relation of the empty car movement to the loaded car movement should be considered, and there should be a similarity in that respect. If there were a decided difference in that percentage from one period to another, it would indicate that there was some difference in the conditions in the two periods. If they are substantially the same, that would indicate similarity.

There is also the relation of the intrastate and interstate traffic. If they are substantially the same, that is, if substantially the same percentage of the total traffic was intrastate and interstate, it would indicate similarity of conditions.

Another matter is the proportion of the expenses, and the traffic, in the State to the total of the road. If in one period the expense should be, say, 15 per cent of the total, and the traffic should be, say, 18 per cent, and in another period the expenses

should be 13, 14, 16 and 17 per cent, and the traffic be within a few percentages, it would indicate similarity of conditions. Possibly there may be others, but those mentioned are what occurred to me when I gave the matter thought. It is not expected that in operating statistics different periods would be just the same, but they should be similar. No one of the conditions standing alone could be controlling, but they should all be taken in connection, and if, taken together, the relation between the road mileage was about the same, between intrastate and interstate, the empty car mileage and the loaded, etc., were the same, then I should think one period might fairly be taken as representative of another. He was then asked what the effect would be on the expense per ton mile in the two classes of traffic, where the intrastate haul remained the same, and the interstate haul was shorter in one of the two periods than the other, and testified that a greater proportion of expenses would be assigned to interstate in the period of the shorter haul, and gave as a reason the fact that the expense increases as the average length of haul is shortened. (R. 328, 380, 441.)

Mr. T. A. Hamilton was examined at some length on the subject and testified that he made investigation for the purpose of testing the normality in the movement of freight traffic during the various periods covered by the exhibits in this case. The results of his investigations are embodied in Exhibit 34, which shows the average miles per freight car per day made on the railroad for the fiscal years ending June 30, 1908 to 1913, inclusive; also the four months ending December 31 in the years 1907 to 1913, inclusive; also for the months of November and December of the latter year, which was the

test period. There is no material variation shown in these exhibits, the fluctuations not exceeding two or three miles on an average, which is negligible. In November and December, 1913, the average per day was 22.29 miles, while during the four months ending December 31, 1907, it was 22.18. He testified that the table embraced all of the cars that were on the railroad, whether moving or standing still, and all the mileage that was made each day by all the cars which actually moved, and that there could be no better index of the normal movement of freight traffic than the average miles made by the freight cars each day. He further testified that he knew from his own knowledge that there was no congestion or abnormality.

The percentage of empty freight car mileage to the total freight car mileage in Arkansas during the four last months of 1907 was 29 per cent, and during November and December, 1913, it was 29.41, being practically the same.

Exhibit 37 shows the road mileage operated in Arkansas during these various periods, and it is practically unchanged, there being an addition of about 5½ miles in the year 1911, and an increase of 20 miles on the entire railroad, thus showing there had been no change in the territory served by the road.

Exhibit No. 38 shows the train miles, net tons, revenue freight one mile, and revenue passengers one mile, per mile of road per day in the State of Arkansas, and Exhibit 39 shows the average haul of freight and passengers, intrastate and interstate, in the State during the periods covered by the exhibits, the latter exhibit being in the form of a graphic chart.

The witness called attention to the fact that this exhibit did not show the average haul for the months of November and December, 1913, that data having been shown for the six months ending December 31, of which those two months were a part, and explained that the factors necessary to produce the average haul figure for the months of November and December were not available. He was asked to explain the bearing these two exhibits have upon the question of normality, and stated:

"On that general proposition I think it should be said that nothing short of an almost miraculous coincidence would produce the same operating conditions upon any given railroad or section of railroad in any two periods, that is, exactly the same operating conditions. There must always be some difference in various periods. Such differences are shown in some of the exhibits that we have here, and, perhaps, notably in these two, but these differences must be considered, it seems to me, not in and of themselves, but in the light of their effect upon the problem that we are endeavoring to solve here.

We have taken the months of November and December, as has been previously explained in the record, as a test period in which to determine the excess cost per ton mile and per passenger mile of intrastate over interstate business. That is all we have used that test period for. It was intended to supplant the expert opinion, or the judgment, of railroad men, that intrastate cost so much more than interstate, as a matter of conjecture, or as a matter of experience, if you will, but we used this test period solely for that purpose to determine the percentage of extra cost of intrastate over interstate traffic, and we have carried those percentages back through all of these other exhibits, applied them to the ton miles and passenger miles in dividing the cost in the other years all the way back to 1907.

Exhibit No. 38, the one I have just offered, shows the train miles, ton miles and passenger miles per mile of road per day in Arkansas.

If you compare the test period of November and December, as shown in this exhibit with, for instance, the four months

ended December 31, 1907—that is, November and December—you will note that four freight trains per mile of line per day hauled 1,280 tons, net, per mile of road per day, of revenue freight. That is an average of a little over 320 tons per train mile as against an average of the 230 tons per train mile in the four months ended December 31, 1907.

It will also be noted from the exhibit that operating exactly the same number of passenger trains per mile of road per day, that is, four, both in November and December, 1913, and in the four months of 1907, we hauled an increase of 74 passengers per mile of road per day in November and December, 1913, as compared with the four months of 1907.

Both of these comparisons, freight and passenger, indicate in a large way a cheaper cost per unit of traffic handled in the test period in November and December than obtained in the four months of 1907. Of course, that applies to all traffic, and there the intrastate and interstate are mingled in these tons and passengers on these trains that I have referred to, and it may be suggested here that we have offered nothing which will show the same relative cost between intrastate and interstate per ton mile and per passenger mile in these two periods.

If we turn to Exhibit No. 39, the chart that shows the average length of haul, we will see it shows the average haul of one ton, the average journey of a passenger, both State and interstate, for all of these periods. It will be noted that in the last half of 1913, the calendar year which included our two months' test period, the average haul of intrastate freight was 25.75 miles, and that this same average haul of intrastate, or within 3-10 of a mile, occurred back in 1907, where the average haul was 25.44 miles—that is, the four months of 1907 that we are concerned with. But the average haul of interstate freight has dropped down in the six months of 1913, which include our test period, from 82 miles to 76 miles. There is a decrease of six miles. It seems to me that that indicates plainly that considering the greater train load and the resultant cheapened unit cost of all freight traffic, that the cost of all intrastate traffic per ton mile was less, as contrasted with the interstate traffic per ton mile, in the 1913 test period, than it was back in 1907. Therefore, so far as the freight traffic is concerned, the excess cost percentage of intrastate over interstate carried back from 1913 to 1907, has been too

small. There is no question in my mind but that intrastate freight hauled an average of 25 miles carries a greater excess cost per ton mile over interstate freight hauled 76 miles, than does intrastate freight hauled 25 miles over interstate freight hauled 82 miles, and, as I previously stated, the intrastate haul of freight was the same in the test period as in 1907, but the interstate haul was six miles shorter in the test period than in 1907.

The burden of extra cost attaching to shorter hauls is the direct result of having a lesser mileage to spread the two terminals over. That is the point I had in mind there. Summed up, the whole function of the railroad's transportation culminates in the haul of traffic. That, to my mind, typifies more than anything else the nature of the cost of the service, and where the haul is shorter the unit cost is necessarily greater.

We have here a distorted relation: Our test period shows that if we have an excess cost of intrastate over interstate which we have carried back into these other periods, if anything, it has been too small, at least as contrasted with 1907, and that is all that we have carried back from the test period, that percentage of excess cost.

As to the passenger traffic in this exhibit, virtually the same conditions as to length of haul appear in the two periods as in the freight service, and the same remarks would apply as to the percentage of excess cost.

On the other hand, if you consider the intrastate traffic by itself, the fluctuation and average length of haul, which is shown plainly in the chart in the exhibit—and that stands out prominently, that the average length of haul of intrastate passenger traffic in the last half of 1913, which included our test period, is the longest of any of the periods for which figures have been submitted, and for that reason we had the cheapest cost per unit of traffic, intrastate passenger, during that period." (R. 451, 452, 453.)

Exhibit 40 shows, in the form of a chart, the ratio of intrastate and interstate in the total freight and passenger traffic in the State. We will explain the effect of this exhibit in the language of the witness:

"This exhibit shows that the intrastate passengers one mile were a larger proportion of the total passenger traffic in Arkansas in the months of November and December, 1913, and also in the four months ended December 31, 1907, than in any of the full fiscal years shown on the exhibit. To one familiar with conditions in Arkansas, the reason for this is plain. The fall period of the year is undoubtedly the heaviest period of passenger travel in this State. This is proven by the fact that the total passenger miles, intrastate and interstate together, in Arkansas, for the four months ended December 31, 1907, amounted to 14,207,000 passenger miles. Multiplying that four months' figure by three to get the year's figure, you get 42,621,000 passenger miles, whereas the actual passenger travel in Arkansas during that fiscal year was only 40,800,000 passenger miles.

Mr. Hill (to the witness): You haven't that on this exhibit?

A. No, sir; it is stated in Exhibit No. 27, those figures for the four months. This shows that multiplying the travel in Arkansas for the four months by three, you get considerably more than the total actual travel for a year, and that will seem to prove conclusively that the fall is the heaviest period of travel in this State.

The total passenger travel in Arkansas in the two months, November and December, was 9,895,000. You multiply that by six to get a year's figure, and the result is 59,300,000 passenger miles, whereas the actual passenger miles for the year in which these two months were included was but 52,400,000 miles.

It is further evident that the fall and early winter months are the heaviest period of the year for intrastate travel along the same lines as indicated there, and, in fact, the chart shows it, but following the same line of thought as for the total travel it may be said that the actual intrastate passenger miles in Arkansas in the four months ended December 31, 1907, were 6,200,000 miles, in round figures. If you multiply that four months' figure by three you get a year's figure of 18,650,000. As a matter of fact, the actual Arkansas intrastate travel in that year was but 17,600,000, and relatively the same condition obtains in the two months' period of 1913, when you multiply by six to get a year's figure. It yields 24,000,000 intrastate

passengers in Arkansas while the actual travel for the year was less than 22,000,000.

That would seem to explain why the percentage of intrastate travel to the total travel in Arkansas was greater in these fall periods than it was for the whole year. It is probably true that the crops in Arkansas have been marketed by that time, that is, the greatest single staple crop of the State, and that the people are financially better able to travel at that time than they are at any other period of the year; at least, the amount of travel would seem to indicate that.

The difference between the percentage of intrastate passenger miles to the total in the test period of November and December, and in the four months ended December 31, 1907, is only 3 per cent, so that one would seem to be fairly reflective of the other. So far as this feature of the normality is concerned, I think that is a conservative statement.

Further, the test period of November and December used to determine the extra cost percentage of intrastate passenger travel over interstate may fairly be stated to have been a period which would show the minimum extra cost of intrastate travel for the reason that the entire cost of all passenger traffic, intrastate and interstate, was but 1.56 cents per passenger mile in these two months. That figure is deducible from the figure which gives the expense and the passenger miles for the test period in the exhibit." (R. 454-455.)

Exhibit 41 also consists of a graphic chart. It shows that in the last four months of 1907, 11.80 per cent of the expenses of the entire railroad were assigned to Arkansas, and that during the same period there was moved in the State 11.28 per cent of the total revenue ton miles of freight transported on the entire line; that during the same period the Arkansas proportion of the total passenger traffic of the entire railroad was 10.25. These traffic figures are expressed in ton miles and passenger miles. During the test period (November and December, 1913), the chart shows there was assigned to Arkansas 10.44

per cent of the total operating expenses, or 1.36 per cent less than the percentage shown in the last four months of 1907. At the same time it will be observed that the proportion which the freight traffic of Arkansas was to the freight traffic of the entire line was 1.8 per cent less in the 1913 period than in the 1907 period, while the Arkansas proportion of the passenger traffic of the entire line was one per cent more in 1913 than in the 1907 period.

Referring to these comparisons, Mr. Hamilton testified that:

"The variations in these percentages are small, but it will be noted that the proportions of revenue traffic moving in Arkansas run fairly well hand in hand with the assignment of expenses to Arkansas. This, of course, covers all business, freight and passenger, intrastate and interstate, the object being to endeavor to show that the assignment of expenses to Arkansas has been fair, considering the proportion of traffic in Arkansas.

"It will be noted, too, that so far as these fluctuations go, that where the proportion of freight traffic is smaller, the proportion of the passenger traffic is greater, that the proportions of expense assigned to the State run about level." (R. 456.)

Exhibit No. 52 contains a table comparing the maintenance of way and structure expenditures per mile of line in the State of Arkansas in the several periods covered by the exhibits with similar averages for the entire line of road, from which it will be seen that these expenditures run about level during all the periods, the expenditures for the two months in 1913 (November and December) being almost exactly one-half of what they were for the four months in 1907. In all the periods except the months of November and December, 1913, the charge in Arkansas per mile of line is a little in excess of

the average for the entire railroad, which is accounted for by the table on page 1 of the exhibit, showing a material excess in bridges and trestles in that State, in the maintenance of which a larger expense would necessarily be incurred. In connection with this subject we call attention to the testimony of Mr. Hamilton at page 538 of the record.

We have dwelt at some length on this point because the test is the foundation of the case, and it is important that every material fact in connection with it should be brought to the attention of the court. The evidence we have recited is wholly uncontradicted. The appellants did not attempt to controvert it or produce any evidence on that point. The exhibits referred to establish beyond question the similarity of operating conditions enumerated by Mr. Nay as proper tests for the purpose of determining whether the period in which the investigation or test was made was representative of other periods to which it was sought to apply the results.

The investigations in this case have been conducted in very much the same way that a manufacturer desiring to know the cost of producing the articles he manufactures would proceed. He arranges a cost accounting system concerning the facts of each operation or process, the time devoted to it and the labor expended upon it, on the spot where the manufacturing is conducted. This method is fundamentally sound because it studies the factors which reflect the use of the manufacturing plant in the production of its output, and gathers knowledge at the source. The Railroad Company in this case may be likened to a manufacturing business; it manufactures and sells transportation, and in the investigations made by it for

the purpose of determining the cost of producing intrastate freight and passenger transportation, it proceeded in the same manner as such problems are treated in commercial manufacturing enterprises. It gathered the data essential to a complete knowledge of the facts controlling the cost of producing transportation of various classes on the trains, in the yards and at the stations where the traffic is handled. Having ascertained the facts at first hand concurrently with the daily operation of the plant, or railroad, there only remained the matter of making a correct application to the cost problem of the information so gathered. That this has been accurately done is not controverted by the appellants. A railroad can not, like an ordinary manufacturer, carry on an investigation of this kind beyond a limited time, as the expense of conducting such a test on a large railroad continuously would be prohibitive, and for that reason, in making cost studies railroad officials necessarily have to confine themselves to a study of the factors influencing cost conditions, and the results, for comparatively short periods, which should be, and are, in this case, reflective of the ordinary normal operating conditions on the railroad. We submit, in conclusion, that the methods pursued in the investigations developed in this case are analogous to those employed in manufacturing plants, that the work was conducted with great care, and the results are as nearly correct, and as closely reflect the cost of the intrastate freight and passenger business, as it is practicable to make it.

It is proper at this point to say that all the records of the Railroad Company, including the calculations and detailed working data prepared in connection with the test, as well as the regular records, were submitted to and checked by the

appellants' accountants, extending over a period of several months, and that no errors of any magnitude, or having any noticeable effect on the results, were developed by them.

The learned counsel for the appellants discusses this question from the standpoint of normality of the four months in 1907, rather than the test period in the last two months of 1913, assuming, as we understand the argument in their brief, that the value of the test must be determined by the normality of the former rather than the latter period. They also take it for granted that the appellees predicate their case wholly on the evidence as to the inadequacy of the earnings of the last four months in 1907. Counsel totally misapprehend our position; the purpose and effect of the exhibits filed, and the evidence introduced by appellees as to the effect of the enjoined rates, was to cover all the fiscal years from 1909 to 1913 and the four months in 1907. It was obviously necessary when appellees made their application for injunction at the commencement of the proceeding that they should select a prior period in which to make their preliminary proofs. For that reason, the four months in 1907 were selected, because they were regarded as the first representative period after the rates complained of had been put in force. It was in that way that that period came into the case. Appellees felt, however, that it would not be proper, or meet the requirements of the case, for them to confine their evidence, as to the effect of the inhibited rates, to that period after so long a lapse of time had occurred before the hearing, and for that reason they attempted to cover the entire period in which the records of the company were available, from the institution of the suit to the end of the fiscal year preceding the test. Exhibits 22, 24-26 cover

all these periods, exhibit 27-A covering the period in 1907. Evidence was introduced by appellees in an effort to show, by the actual movement of business, that the period in which the test was made was reflective of the traffic conditions that existed in the preceding periods, and for that purpose testimony was introduced showing in what respects there should be similarity of conditions in the different periods. These conditions having been established by the uncontradicted evidence, the exhibits taken from the records of the company, which are admitted to be correct, were filed and are fully explained, and the effect thereof pointed out in the testimony of Mr. Hamilton which we have quoted, and which we submit establishes such similarity in the movement of traffic, and in general operations affecting traffic, such as the empty car movement, the length of haul, the road mileage, the train miles per mile of road per day, and other conditions pointed out, as to leave no room for doubt, or reasonable question, as to the normality of the test period as compared with the preceding periods covered by the exhibits; and no reason has been shown why the traffic of the railroad should not have run evenly and have been characterized by the same general conditions, throughout the five years covered by the exhibits and evidence. The condition of the country, and of business generally during that period, save for a short depression which began in the latter part of 1907 and ran through the year 1908, which is not covered by the exhibits, was normal. There was nothing to disturb the even balance of trade or to create any unusual or abnormal fluctuations in the movement of traffic throughout the country. It would be strange if under these circumstances there had not been such similarity of conditions in traffic as

is developed by the statistics and the evidence produced in this case.

In this connection counsel quote the following language in the Minnesota rate case (230 U. S. 559):

"The wide variation in results obtained on the different hypotheses, each of which is earnestly supported in argument, illustrates the necessity for the keeping of suitable accounts, at least during typical periods, which will furnish correct statistical information bearing upon the cost of intrastate transportation as compared with interstate, instead of leaving a matter of such intricacy to general expressions of judgment."

The court, in the language used, was referring to the effort in that case to establish the cost relation of intrastate and interstate transportation by opinion evidence, instead of gathering suitable facts by tests made during typical periods for the purpose of establishing the difference in cost on the basis of facts, rather than conjecture. The record in this case shows that in selecting a typical test period, and in making tests from actual daily operating conditions, and in justifying the representative character of the period, and the results of the test by actual evidence based on ascertained facts and statistics taken from the record of the railroad company, the appellees have tried to follow the suggestion contained in the quotation, and have collected such detailed facts and information bearing on these questions as has never been presented in the record of any case of this character before.

"STIMULATION OF TRAFFIC."

Counsel take a curious position in regard to the effect of lower passenger rates in the way of stimulating travel. In appellees' exhibit 61, in which the earnings and expenses,

including taxes, rentals, hire of equipment and every class of expense, and the return upon the value of the property for the four years 1910, 1911, 1912 and 1913, are set up, it was necessary, in order to ascertain the effect of the inhibited freight and passenger rates, to deduct the difference in the revenue that had accrued from the transportation of freight and passengers between the rates actually charged during those periods, as shown by exhibit No. 33, and what would have accrued had the inhibited rates been charged. Counsel say the diminution of the revenues for the purpose of placing them on the basis of the rates in controversy was erroneous because, forsooth, if those rates had been in force it might have stimulated traffic and increased the number of passengers, and the tons of freight, moved during those years, while as to the four months in 1907, when the inhibited rates were in force, they say the comparison is unfair because the exhibits demonstrate that that period was not typical. Just on what ground such an assertion can be supported is past our comprehension.

It is manifest that the only way by which the effect of given rates in the way of return on the value of the property can be determined is by applying those rates to the traffic as it exists at the time, and the question as to whether the lower rate affected the result of such application by stimulating traffic, and if so, to what extent, must be determined by later developments. Realizing that it was a proper subject of inquiry in this case, the appellees introduced evidence for the purpose of throwing light on the question as to the effect the inhibited rates would have in increasing traffic and thereby

making up, by a larger volume of business induced by the lower rate, for the decrease in revenue resulting from the use and application of that rate. Mr. Hamilton testified at some length on this subject at pages 457-459 of the record and, in connection with his evidence filed exhibit 42, which contains a statement of facts and a table showing the difference in intrastate passengers in the months of August, 1912, and June, 1913, when a rate of three cents was in force, and August, 1913, when the rate was two cents. Counsel, in discussing this table, have fallen into the error of assuming that the second and third columns which appears on page 3 of the exhibit, represent different sales, and say the court below fell into an error by using only the ticket sales contained in the last column. The court was right inasmuch as the first column contains the number of tickets sold, the second column the number of cash fares paid at the stations mentioned, and the last column, the one used by the court, represents the total, and therefore cumulates the two classes of passengers, namely, those buying tickets and those paying cash fares on the trains. The court found, at page 924 of the record, that at certain stations mentioned as interior stations, namely, Jonesboro, Hoxie and Ashdown, a large part, if not all, of the excess, which was from 28 to 33 per cent at the different stations, was attributable to the fact that those towns were near the border, and so located that there was a large interstate travel to and from them, on which the rate was three cents, as against two cents for intrastate travel, and that therefore the same conditions which existed at the border stations would naturally exist at those points. The facts upon which the finding was made are all in the record, and the

court was obviously right in its conclusion. Mr. Hamilton's testimony makes it perfectly clear that the greater part of the increase in intrastate traffic was produced by the purchase of intrastate tickets, or the payment of intrastate cash fares, by interstate passengers, and even with an increase of 21 per cent in intrastate passenger miles there was a falling off of intrastate passenger revenue of 14 per cent.

This demonstrates the fact that even if all the increase, or stimulation of travel, had been *bona fide* intrastate and attributable to the lowering of the rates, it would not have increased the earnings, and the only purpose for which such an inquiry is proper in this case is to determine whether the loss would be made up by increased traffic. Mr. Nay, who had a similar experience on the Chicago, Rock Island & Pacific Railroad, corroborates Mr. Hamilton's testimony (R. 333 to 336, and 436 and 437.)

In opposition to the records and testimony of the appellees, the appellants produced the testimony of Mr. Simson, who testified that he did not think it possible to estimate with any accuracy the results of changes in rates; that he did not know anything about the traffic conditions on the St. Louis & San Francisco Railroad in Arkansas, or on any part of that system of roads, and, further, that it was impossible, when you have the statistics of a certain number of passengers traveling a certain number of miles for a given year under a through three cent rate, to assume that under a two cent rate just exactly the same number of passengers would have traveled that same number of miles. No such assumption has been made. The records have been introduced, and in fact a

test was made, for the purpose of determining whether the increased traffic was *bona fide* intrastate, and the results of that test are developed in the testimony of Mr. Hamilton, based on reports made by conductors and traveling auditors, which can not be overcome by general assumptions and conjectures of a witness who admits that he had no knowledge whatever in regard to existing conditions. That is harking back to the old methods that were condemned in the opinions of this court in the cases reported in 230 U. S. Mr. Simpson further testified that he was never a traffic man and had no knowledge or experience in regard to traffic conditions, or as to the effect of changes in rates in stimulating traffic. His testimony will be found at pages 792 and 793 of the record. When asked the effect of a change in freight rates, he said it would probably have the same effect, as a change in the rating would undoubtedly affect the direction of traffic. And counsel referred to cases before the Interstate Commerce Commission where it was shown that a change of freight rates would deflect traffic from one jobbing center to another. The suggestion of the witness, and the cases before the Interstate Commerce Commission referred to, are where changes result in different and unequal rates, but where the entire scale of intrastate rates are changed uniformly, and their relation maintained throughout the entire territory, the change would not produce the effect contended for. The inhibited passenger and freight rates were confined to the State of Arkansas and applied to all railroads and all intrastate business. The change was uniform in its operation and effect upon all railroads, and all freight traffic, and it needs no argument to show that under such circumstances, where the change is uniform, and the rela-

tions unchanged in every respect, the movement of traffic would neither change in direction nor be deflected.

Counsel cite and quote from the opinion of the Interstate Commerce Commission in the Western Passenger Fare Cases, 37 I. C. C. 1, in which the commission found that three cents was a reasonable interstate rate in Arkansas.

In Interstate Passenger Fares Cases, 31 I. C. C. 532, decided on July 18, 1914, in which proceeding the Arkansas Commission was a party petitioning for a decrease in the three-cent interstate passenger fares on railroads in that State, the Interstate Commerce Commission held that that rate was not unreasonable in the State of Arkansas. In examining the question the Commission found, by taking one of the exhibits and comparing the 3-cent fare period with the 2-cent fare period, that it showed an increase during the latter period, and while the 2-cent rate was in force. From the same table a similar comparison showed the opposite result, and other evidence introduced in the case, showing the extent of passenger travel in thirteen States, showed that the passengers carried one mile increased in practically the same ratio in five States where there was no change in the passenger fares, as it did in eight States where the fares were reduced. Comparing two months' business, January, 1913, and January, 1914, in the former of which the fare was 3 cents, and the latter 2, showed a decrease in revenue during the 2-cent period. After citing these facts, the opinion states that they illustrate the fact that there are so many conditions determining the extent of passenger travel that correct conclusions can not be reached from a consideration of any one condition alone; that population was increas-

ing in the States, representing a greater density of population, and making more travel. Periods of prosperity or reverses affect the total volume of travel. That the comparison of revenue between 2 cents and 3 cents periods prove nothing in favor of the lower rate, because the evidence clearly shows a large number of interstate passengers did not pay the higher interstate fare, but reticketed at border stations, by which means the passengers paid the interstate fare for only a short distance, and what appears in the carrier's account as intrastate passenger revenue would, under normal conditions, be interstate. The Arkansas railroad lines were involved in that litigation, and the facts developed in this case on this point are similar to those recited by the Commission.

APPORTIONMENT OF MAINTENANCE OF WAY, "LINE" EXPENSES BETWEEN THE FREIGHT AND PASSENGER SERVICES.

The expense of the upkeep of the track, track structures and appurtenances of a railroad are known as the Maintenance of Way and Structure Expenses. Under the formula, filed as Exhibit No. 1, and as explained in detail in Exhibit No. 2, all such expenses of the St. Louis and San Francisco Railroad as could be definitely assigned to the freight or passenger services or to "line" or "terminal" service, were so assigned, based upon data of actual expenditures for such maintenance, kept separate by individual tracks and structures, through records prepared by the men in charge of such maintenance work. This detailed allocation left for solution only the problem of dividing between the freight and passenger services the maintenance of the main line track, or, as it is called in

Exhibit No. 1, "line" track and appurtenances, which are used in common by both the freight and passenger services, which amount to 21 per cent of total operating expenses (Exhibit 9).

It was desired to divide the common "line" expenses for maintenance of way and structures upon basis of the *use* made of the common facilities, by the freight and passenger services respectively. The use of the "line" track of a railroad by the freight and passenger service consists of the movement of weight—that is, engines and cars and their contents—over the required distance at the speed which the nature of the traffic requires for its movement, and under the service conditions and vicissitudes with which railroad operation has to contend. It became necessary, therefore, to find a unit of measurement which would most nearly reflect all of these elements of the service rendered to the freight and passenger traffic respectively, and thereby to reflect the *use* made by each of those two classes of traffic of the "line" track and structures of the railroad.

It is axiomatic that if engines be properly designed—as American engines are conceded to be—the power of the engine, or the effort which it can exert, is directly in proportion to its size.

This power is utilized either in the pulling of weight, or the running at higher speed, or in combating service conditions which operate to retard movement.

The best index of the size of an engine is its weight. At least, this is the best common unit upon which the service capabilities of two or more engines may be compared.

Inasmuch as all service rendered to the public by a railroad, in the rendering of which the track is used, must be expressed in terms of distance, or miles over which traffic is moved by locomotives, the weight of the engine (indicating its size) multiplied by the miles it has been operated in freight and passenger service—in a word, the "engine ton mile"—is undoubtedly the most accurate measure of the *use* made of the main line track of a railroad in the conduct of the freight and passenger traffic respectively.

The reason for using that factor is succinctly stated in the testimony of the witnesses Nay and Hamilton. Mr. Nay testified:

"We had a great deal of discussion as to the best basis to adopt in connection with this division; in fact, I presume that that part of this formula was given more attention than any other part. A study was made of the engines used in freight and passenger service, and it was found that the passenger engines which hauled trains at a high rate of speed were practically of the same weight as the large freight engines which moved slower, but pulled heavy trains. In some cases, the passenger engines of those high speed trains are heavier. We found in studying the situation that the weight of the engine really represented the service performed as to weight and speed.

In the old formula it was urged many times that speed was not considered. The argument for using the train mile basis was that the extra speed of the passenger train offset the greater weight of the freight train.

Q. Under the old method?

A. Under the old method, but, as I say, in studying the conditions we found that the weight of the engines actually

did reflect the speed, in the case of the passenger engine, and in the case of the freight engine the weight which was pulled, and also the speed; that is, for greater speed and heavier weight you must have a heavier engine; for slower speed and a lighter train, you must have a lighter engine. Then, again, when it comes to that portion of your expenses—the ties, rails, track material and ballast, to a certain extent the heavier the engine the greater the damage done to the track, so that the weight there is an important factor.

We frequently strengthen bridges, put in heavier rail and additional ballast because of heavier engines put on, not because of heavier cars.

Taking all those things into consideration, we decided that the engine ton mile basis was the best basis that we could get which would represent the use, and by use combining speed as an element of use with weight and the distance traveled. Hence, the committee which framed this formula decided on the engine ton mile basis, and it has been used." (R. 309.)

Mr. Hamilton testified:

"We took the engines which actually hauled freight and passenger trains, and the miles they ran, and multiplied the miles made by each engine drawing the passenger train by the dead weight, the total dead weight of that engine, making an allowance for the contents of the engine tank or tender estimated at two-thirds of its carrying capacity in water and coal. That is, we took the weight of the engine complete, in running order, everything above the rails, and multiplied it by the mileage the engine made, freight and passenger, *each engine separately,* building up the freight and passenger engine ton miles. * * * It has been stated, that only a minor portion, varying from twenty-five to ten per cent, of the actual up-keep expenses of the track is directly traceable and chargeable to the wear and tear occasioned by running trains over it," and that the other ninety per cent to seventy-five per cent of maintenance was the result of elemental action, the erosion of the bank, rotting of ties, deterioration of rails, deterioration of fences, buildings, etc., and that would go on if you never ran a train over a track, to a large extent.

We felt, that the best basis on which to divide maintenance of way, and one that would reflect a proper division both of

that portion which is chargeable to the direct wear and tear by reason of the running of trains, and that portion which would accrue if you ran no trains, would be some unit that would really measure the use we got out of the track in freight and passenger service. There was only, so far as we could see, one common ground on which the freight and passenger service could meet, and that was the engine ton miles, and for this reason: The weight of your engine denotes not only its type, but the size and character of the train that you expect it to haul. It is conditioned to the service required of it.

The train behind your passenger engine consists of fewer cars than the train behind your freight engine, but your passenger engine is required to run, necessarily, at a greater speed. Your freight engine is required to pull a heavier train at a slower speed. It seems to us that the size of the engine being conditioned to the speed and weight combined, and expected to be met with in your freight and passenger trains, respectively, really was the best common unit of measurement of the use that you got out of your track as between freight and passenger service, because you use your track to pull trains of varying weights, at varying speeds, the locomotives in the freight and passenger service being accommodated as to the speed and the tonnage that you must handle." (R. 109, 110.)

Again, beginning on page 210, the same witness said:

"We assumed the size of the engine, indicated by its weight, indicated the weight and speed of the train it was expected to pull, and that was the use that the train got out of the track, regardless of how the necessity for its up-keep and repair arose, whether elemental or straight wear and tear." (R. 210.)

J. A. Frates, the general superintendent of the St. Louis & San Francisco Railroad, also testified on this subject. This witness testified that he had an experience of about thirty years in railroad service; had been fourteen years with the St. Louis & San Francisco Railroad as assistant superintendent, superintendent, and general superintendent; that he su-

pervised the engine ratings and was responsible for knowing that they were carried out in the operation of the road. That the ratings shown on the working time tables are obtained by actual pulling tests under normal conditions, and represent the maximum tonnage that can be hauled under such conditions at a speed of ten miles an hour. He was asked if it was practicable to reach the maximum potentiality in the average every-day practice, and stated that in operation the potentiality of the engine was reached, but not the tonnage maximum. He shows that an engine may be working at its full potentiality where the conditions are such that it can not haul its maximum tonnage. In speaking of the effect of speed in connection with efficiency in the operation of engines, he testified that an engine which would pull 100 tons ten miles an hour would probably have to reduce the tonnage one-half to attain the speed required in an expedite movement. Mr. Frates explained in detail the effect of fluctuations in the condition of the weather and other elements that affect the capacity of engines. He testified that the practice is to assign a certain number of engines to a certain district to move all the business in that district. The volume of traffic may be heavier in one direction than the other. In such cases the train moving in the direction of the volume would move loaded and the train moving in the opposite direction to the volume would move light, or with reduced tonnage, and in such cases it is necessary to use an engine of the size adapted to the larger volume of the traffic in the reverse direction. He also described the local conditions that might affect loading on train runs, and explained how it often occurs that a train may start out of a terminal with light loading and be required to pick up at local

stations along the line until it gets its maximum load. He also testified that in addition to the responsibility of the general superintendent the company provides a superintendent of locomotive efficiency, who is in direct charge of that particular feature and has an assistant on each division called "Assistant Superintendent of Locomotive Efficiency." It is the duty of these officials to fit the engines to the work that is required of them and to get the greatest efficiency possible out of the engines. They are held responsible for producing the most favorable results, and are required to show their performance, and if it is not 100 per cent, to explain why not. Their reports and explanations are followed up and if they are not reasonable, the officer is held responsible.

Referring to passenger service, he testified that the officials of the company usually assigned passenger engines with reserve power to meet conditions that may arise, as it would not do to put an engine on a passenger train that would work to its maximum, because if the engine was called on to handle an extra car, or adverse weather conditions should arise, it might not be able to handle the train satisfactorily. That the number of cars in passenger trains vary in accordance with the exigencies of the service. That the weight of the engine reflects its tractive power; that the size of the engines on the St. Louis & San Francisco Railroad were conditioned to the weight and speed of the trains they were expected to pull, both in freight and passenger service, in the interest of economy, for if we put an engine on a train with more tractive power than is necessary it is a waste of power, and therefore money, and so in the interest of economy we try to apply what power is necessary, and not to apply any more than is abso-

lutely necessary to take care of the requirements. Mr Frates' testimony begins at page 805 of the record.

The objection of the appellants to the use of the engine ton mile as a factor for dividing this class of expense between freight and passenger is that freight engines do not, upon every trip, in every direction and under all of the service conditions, haul 100 per cent of the gross weight that the engine is theoretically capable of moving and that, therefore, the size of the engine does not uniformly represent the use made of the track in the movement of freight, or in the service rendered to the freight traffic.

Railroads endeavor to produce freight transportation—service consisting of the movement of weight over distance—for the least possible cost per unit of traffic. With this object in view, engines in freight service are tested upon each section or district of the railroad to determine their maximum capability to move weight. This is known as the engines "rating."

The costs incurred by the railroad are incurred largely per train mile. That is to say, the cost of operation is no greater per train mile as to many classes of expense, for a heavy train than for a light train. The railroad, however, is paid for the service it renders, by the ton mile. Therefore, the greater the number of tons moved in a single train, the cheaper the cost of transportation per unit of traffic which the railroad charges freight upon, and the greater the net revenue accruing to the carrier. It is with this object in view that the test of engines, previously referred to, is made and the maximum capacity to move weight fixed for each engine. This then is

set up as an efficiency mark to be aimed at by all operating officers of the railroad, as is explained by the testimony of the general superintendent of the railroad, Mr. Frates.

Commercial necessities will not permit that the railroads shall move freight in maximum train loads at minimum speeds. The public requires service of a higher character and more expeditious than the railroad, from the standpoint of economy, can render. Perishable freight must be moved rapidly. Trains must be run with lighter loads to accomplish that end. The movement of freight must be carried on with more or less expedition, regardless of weather conditions. To overcome such conditions and still maintain the requisite speed, trains must be run lighter than economical operation would dictate. Freight must be moved over mountain grades, and to meet this condition, moved in lighter train loads than in the more level country. At times the preponderance of traffic moves in one direction over a division or district of the railroad, and engines must be run back in the opposite direction with less than a full train load in order to be available for service in the direction of the volume of traffic. All of these practical service conditions operate to defeat the effort of the carrier to always place behind its freight engines 100 per cent of the gross weight such engines could pull, under the most favorable and ideal conditions.

The appellants finding these efficiency train load tables, or engine ratings, of the railroad among its records, used them as a basis for the contention that, because the engines did not always pull over every mile they traversed in train service the full maximum load indicated by these rating ta-

bles, the size of the engine did not reflect the service it rendered to the freight traffic, and the use that traffic got out of the track. They ignored entirely the element of speed which is a part of the freight service the carrier furnishes to the public, and a very important part of the use that the freight service makes of the track. They ignore entirely the weather, gradients and other service conditions which have been described, and which locomotives have to overcome in using the track for the benefit of the freight service.

The only witness produced by the appellants on this point was L. S. Mayer, who testified as an expert.

Mr. Mayer introduced an exhibit marked "CC," which was taken from the company's train load efficiency records, from which he endeavored to show that the engine ton mile was not a proper factor for dividing maintenance of way line expense between freight and passenger, because the freight engines did not, in the period represented by his exhibit, pull 100 per cent of their time card theoretical maximum rating. His testimony contains much repetition and is too voluminous for us to cite it in detail, but we wish particularly to call attention to the fact that in all his criticisms of the engine ton mile he ignored the fact that the speed of the train constitutes a factor in the use of the track as well as the weight of the train. He did not have sufficient knowledge to understand the effect the fluctuations necessarily incident to the traffic would have in the practical operation of the railroad's facilities. He was absolutely ignorant of the manner in which speed affects, and is a leading factor in the efficiency and performance, of an engine. This is abundantly shown through-

out his testimony from beginning to end; and hence that element was totally disregarded by him, while every other witness who testified on the subject, including such men as Mr. Symons and Mr. Frates, explained why it was one of the most important and determining factors. The evidence shows that an engine of a given rating today may haul thirty cars at the rate of twenty miles an hour. It may be called upon tomorrow in moving expedite freight, to haul five cars at a high rate of speed. It is performing to its full efficiency in both cases because its efficiency and pulling power are largely controlled by the speed at which it runs. He overlooked the fact that the engine rating is simply a marking of the efficiency of the engine under ideal conditions, and that what is expected of the operating officials is that they will get out of each engine the efficiency of which it is capable with reference to the service conditions that exist in its operation. It is in this way that the engine represents the train it pulls in all cases, whether loaded to its potentiality or not. Mr. Mayer controverts this proposition, and for that purpose produced the table contained in Exhibit CC. He was asked at page 647, what elements or factors there were for determining the power of a locomotive, and stated that he could not testify as a mechanical expert, and at page 647-648, he was asked what is tractive power, and answered, "I do not know what the technical definition of tractive power is." Again at page 652:

"Do you know what is meant by the ruling grade of a railroad in the rating of an engine?

And answered: "No, sir; I do not know anything about the technical construction of these rating formulas."

And at page 653, he testified he did not know what mechanical knowledge the rating shown in the company's record was made up on. And again he was asked at what speed an engine is expected to haul a load at the rate indicated on the time card, and answered:

"I do not know what speed they used here."

"Q. Does it represent more speeds than one?"

"A. I do not know on what basis they made it up.

"Q. Does it represent variable speeds?

"A. I do not know."

He was asked:

"Do you know, or can you tell me, whether that (referring to the rating) represents the drag load the engine can pull on the ruling grade in the district in which it operates?

"A. I do not."

"Q. Does not the rating in the time card reflect the load the engine is supposed to be able to move simply at drag speed on the ruling grade of that particular district?"

In answer to which he said:

"I do not know. All they show is the rating, and by their exceptions they show they expect every engine to pull that rating."

"Q. Would the engine be expected to haul the rating shown on the time card at any variations that may occur in the speed?

"A. I do not know what basis they made up the tonnage rating of engines on, but it is presumed to be as nearly as possible the actual requirements, so far as the movements of traffic is concerned. There are some exceptions which I quoted to you."

"Q. Take speed."

"A. *At the speed the management thinks proper.*

"Q. Suppose an engine is rated by the time card at 1,500 tons. That means it can pull 1,500 tons at drag speed over the ruling grades of the district?"

"A. That is not necessary for my information in this case."

We direct special attention to the testimony of this witness on pages 641 to 711.

We beg the indulgence of the court in presenting these extracts and references to the testimony of this witness. The subject is one of importance, and what we have quoted from his testimony, and other evidence referred to in the record, so clearly indicate his ignorance on the subject, and the fact that the views expressed by him were not based on an understanding of the conditions affecting the service, that we feel that in justice to our case we should bring the matter to the attention of the court. This witness produced and read extracts from a paper which he stated was from the report of the American Railway Engineering Association. He spoke of it as a paper that came to him from the Interstate Commerce Commission, giving the impression that it was a paper approved by that body. It turned out to be a letter written by a member of the Engineering Association, giving his individual views as to a proper factor for the apportionment of this expense, and was simply published along with the proceedings of the meeting of the association.

Mr. Mayer gave as his opinion that that part of the expense which results from the use of the track, say 10 per cent,

should be divided on the gross ton mile basis, and the remainder on the train mile. (R. 703, *et seq.*). After which appellees had Exhibit No. 60, containing a comparison of the effect of applying the basis suggested by Mr Mayer—10 per cent wear and tear, 90 weather stress—with the engine ton mile basis used by the Railroad Company in this case prepared. This exhibit shows that the net effect of using the gross ton miles as to the 10 per cent is to increase the freight expense $1,253.31 and diminish the passenger expense in the same amount.

He further testified that the equating method had the effect of carrying back into the year 1907 the engine ton mile percentages resulting from the actual engine ton miles in 1913. He said on this point:

"The result of using the 1913 engine ton miles for the two months which are in this formula and applied back to 1907, results in the passenger being charged too much and line, maintenance and freight too little, just using the engine ton miles itself without regard to the value of it."

The matter was investigated by Mr. Hamilton and he made the folowing statements in regard to it when recalled to the stand:

"The result we got under our equating method—I was talking of maintenance of way expense—was practically the same, or exactly the same, as making the direct apportionment back there.

I don't think that perhaps I gave you all of the factors I had in mind. I did not mean to omit anything, but there is another element that I might have quoted to throw a little light on it.

Since we were last here I dug up, with much labor, dispatcher's sheets for the Arkansas territory for 1907. They told me many times that they did not have them, but I per-

sisted until I found them stored at Memphis, or, rather, most of them.

I worked up the engine ton miles for those four months just as we have done it here. We assigned back yonder to maintenance of way, as I said this morning, under the new formula, 58.44 per cent of maintenance of way expenses to freight.

The engine ton miles, as we worked them out actually for those four months—the same as we have done for the 1913 test period, are 60 per cent of freight, within 2 per cent of our assignment here. There we have assigned just a little more. So the equating was not at all a bad proposition when you get down to the concrete effect of it.

I meant to make mention of those engine ton miles this morning but it got away from me.

I also have the data, and the train sheets themselves are available here in St. Louis now, if it is desired to see them." (R. 878.)

Mr. Mayer's experience in railroad service was not such as to qualify him to testify as an expert. He admitted he had no knowledge of civil or mechanical engineering and had never occupied any administrative, supervisory or executive position in railroad service. His own statements showed that he was unacquainted theoretically or practically with the matters about which he testified, while at the same time he testified with a greater appearance of self-confidence and in a more dogmatic manner than witnesses who possessed far greater qualification.

We invite attention to the comments on his qualifications, and his evidence in the opinion of the court below at page 917 of the record.

Counsel refer to the recent decision of the Interstate Commerce Commission in the "Western Passenger Fares" case, 37 I. C. C. 1, as a ruling against the engine ton mile basis for dividing common maintenance of way expenses.

While the Commission used the items of operating expense appearing in I. C. C. accounts 80 to 87, inclusive, as the basis of division in the inquiry before it, it expressly stated that its decision must not be regarded as conclusive of the method that should be ultimately used. They say:

"We are using these direct train costs in this instance to determine the apportionment of unallocated expenses between passenger and freight because the objections to this method seem less forceful than those that have been urged against any of the other methods proposed."

Whatever weight the court may give the opinion of the Commission in a case directly decided by it under a similar state of facts, no great importance can be attached to the decision cited because it is not the final determination of the question by the Commission, and, so far as appears, the finding was not based on the same character of evidence as was applied in this case.

We have not seen the evidence presented to the Commission, but it appears from the opinion that the evidence as to the worth of the engine ton mile unit, and its effect in measuring the use made of the tracks and facilities of the railroad in actual service, and under varying operating conditions and the use and value of engine ratings as the measure of the service to be performed by them, was not developed in the evidence in the hearing before the Commission as fully as it has been in this case.

The opinion calls attention to the fact that a large proportion of the expenses incident to the maintenance of way and structures is not influenced by the weight and speed of the trains that pass over the track, but is the effect of natural causes. If the expense of maintenance is to be divided with reference to the causes that produce the damage and charged to the service in which the injury occurred, that fact is material; but if it is to be apportioned with reference to the *use* made of the track, we are unable to see how it can have any material bearing. As we understand the proposition, it is plain and simple. Here is a track that has to be used by engines and cars. Its upkeep involves a given amount of expenditure for maintenance made necessary from many different causes. This expense is to be apportioned between the different branches of service on the basis and in proportion to the *use* they made of the track, without regard to the causes out of which the expenditures grew. It is not material, therefore, in this case, whether the cost of upkeep is the result of traffic wear and tear or natural causes, the expense has to be incurred, and is to be apportioned between the freight and passenger services on the basis of the *use* made of the track in each branch of service.

It is stated at page 86 of the brief that the statistics in the Western Passenger Fares Case would indicate that the relation of maintenance of way expenses, passenger and freight, should be about 30 and 70 per cent, "and the working up of the data called for by the Commission would probably bring about such a percentage; that data is not before you; it is not in this record, and nothing but conjecture is left as to the extent of this error." We have read the opinion of the Commission

with care, and feel warranted in saying that it contains no statistics that support the statement made by counsel, and, in fact, the learned counsel say as much in the language quoted from their brief. The percentages quoted by counsel are a composite result of applying the basis, referred to, to a group of twenty railroads, extending all over the Western half of the United States, and this is the percentage which counsel compares with the engine ton mile percentage developed locally on the St. Louis & San Francisco Railroad within the boundaries of the State of Arkansas.

DIVISION OF YARD AND STATION EXPENSES BETWEEN LINE AND TERMINAL.

The witness Mayer also criticized the method prescribed in the formula in this case for the division of yard and station expenses between line and terminal services. We call attention to his testimony at pages 571-574, of the record, in which he asserts that there should be no difference in the treatment of a shipment originating on a branch line, in passing through a division point, and one originating on a foreign line and delivered to the St. Louis & San Francisco Railroad at a division point. He assumes that the handling is the same and it should be treated as terminal service in both instances, losing sight of the principle upon which the formula is based, requiring this division to be made with reference to the character of the service rather than to the accident of similarity of service. This has all been explained in the exhibits and testimony heretofore referred to, and we will not take up any further time with it other than to call attention to the testimony of Mr. Hamilton at pages 859-861 of the record. It will

perhaps be better to quote this testimony than to attempt to state its effect. It is as follows:

"Q. Mr. Mayer, in his evidence, criticized your plan for dividing expenses on station and yards, stating that your method had overburdened the intrastate because you had applied the state-wide ton units to the terminal proportion of station and yard expenses; and the state-wide line units, that is the ton miles, to the line proportion of station and yard expenses, in dividing between intrastate and interstate.

Mr. Mayer, as I recall it, stated that you should have made this division on the basis of business received and forwarded from each individual station. He further stated you should not have treated the expense of handling at station traffic interchanged between main line and branch lines as a line expense which you subsequently divided on the state-wide line units; that this traffic should have been treated as terminal at junction stations, each junction station being treated separately.

Have you made any investigation as to what the effect upon your results would have been had you followed Mr. Mayer's plan?

A. Yes, sir. I have taken Fayetteville station on our central division as typical point. I think it is a first-class illustration. Main line local trains and through trains run through there, the locals having their terminus at Fort Smith to the south and at Rogers to the north, the through trains running through Fayetteville from Fort Smith to Monett, in most instances.

Out of Fayetteville there are two branches leaving the main line, one the Ozark & Cherokee Central running across through Muskogee and out to Okmulgee on the Red River Division in Oklahoma; the other the St. Paul Branch which now runs out to Pettigrew. I thought that was just as typical an illustration of the situation Mr. Mayer discussed as I could find, and Fayetteville is a good sized healthy station.

There was just the condition there in actual operation that Mr. Mayer used for his illustration.

I have lifted the Fayetteville expenses and operating performance bodily out of our two months' figures.

I reconstructed a divisioin of expenses at Fayetteville on Mr. Mayer's plan, for the test period of November and December, 1913, following his suggestions literally. I have segregated first from the state-wide pool the station and yard expense actually incurred at Fayetteville during the test period. I have divided the Fayetteville station expenses between line and terminal, freight and passenger, on the basis of the agent's time-study made by the agent at that station, and which was included in our November and December, 1913, test.

I have made a subdivision of the freight expenses as between clerical or office, freight house and yard, and by 'yard' there I mean the yard proportion of the station expenses, office and yard clerk, chargeable to freight services, and have made this apportionment on the time study basis.

Right at that point the passenger proposition goes out of the problem of making the freight study that Mr. Mayer suggested. I have added the time study proportion of the yard expenses properly chargeable to freight terminal, to the yard proportion of station expenses chargeable to freight terminal.

I then set up the terminal freight expenses divided between clerical, freight house and yard at Fayetteville, alone, taken out of the state-wide pool. The clerical freight terminal expense I divided between state and interstate on the basis of the number of consignments handled at Fayetteville station alone. That is what Mr.Mayer said he would have done. The freight house expense chargeable to terminal freight at Fayetteville I divided on the basis of the number of tons of less-than-carload freight received at and forwarded from Fayetteville station proper.

The yard freight terminal expense I divided between state and interstate on the basis of the number of loaded cars received and forwarded from Fayetteville station.

All these units were state-wide units in the pool that Mr. Mayer complained of. Now I have localized them.

The freight line proportion of the yard expense at Fayetteville determined upon the time study in that local yard, I divided between state and interstate on the basis of the gross tons of loaded cars picked up or set out at Fayetteville by

main line trains passing through, or brought in or taken out by branch line trains. That is exactly what Mr. Mayer said he would have done, localizing the whole proposition and making the division or application of our units in that way.

You see, we have virtually resolved, or actually resolved, that branch line interchange into the terminal proposition in dividing its line expense burden as he said he would have done.

To contrast the result of this method proposed by Mr. Mayer, and which we have followed literally as we understood him, I extracted from the figures which have gone into the company's exhibits the detail of the Fayetteville expenses set up on the basis of the formula, and prorated on state-wide line units. That is, I just took out the Fayetteville expense and set it up by itself, and applied to it the same state-wide units as had been applied to it when it was in the pool. Contrasting the results of following Mr. Mayer's suggested method, with the results obtained under the method reflected in our exhibits, I find that of the total station and yard expenses at Fayetteville there was charged in our exhibits $592.66 to intrastate freight and $2,205 to interstate freight; whereas, following Mr. Mayer's suggested method I got a charge to intrastate freight of $1,058.51 and to interstate freight of $1,739.35. So that Mr. Mayer's suggested method, had we employed it in compiling our exhibits, would have charged to the intrastate freight at Fayetteville—certainly a representative statement of the condition he discussed—almost 100 per cent more than we really charged to that intrastate freight.

I don't think Mr. Mayer's method is right. I think that the business of the state, intrastate and interstate, separately, must stand or fall alone. We are running that whole railroad in the State, we are not just running Fayetteville or Winslow, or Fort Smith station, and it is all part of the game.

There is the reciprocal service one place and the other—I can not think of any other illustration than the one Mr. Mayer himself made of Fort Smith and the Harvard yards. They are all necessary to the conduct of the company's business in the State. We are not running stations, we are running a railroad." (R. 859, 860, 861.)

It will thus be seen that taking a typical station in which the operating conditions discussed by Mr. Mayer actually ob-

tained and applying his suggested method in detail would have resulted in charging the intrastate freight traffic double the amount which was actually charged under the formula contained in Exhibit No. 1. The division made in that formula is the logical and correct method of making the division with reference to the relation of the service to the traffic. It is clearly a line expense and it would be improper to treat it otherwise, and this is but another illustration of the little value of conjectural statements made by witnesses when brought in touch with, and tested by, an analysis of the actual facts, where the matter in controversy can be demonstrated.

The finding of the court below, set out in the opinion at page 920 of the record, that "the formula of the company is correct, that it is a haulage, and not a terminal charge; that the error of Mr. Mayer is that he confounds the yard and station expenses with the terminal. In the one instance it is a part of the haul, while the latter is that of receiving, storing and delivering," is sustained by the evidence.

APPORTIONMENT OF CAR REPAIRS BETWEEN "LINE" AND "TERMINAL" SERVICE.

The formula in Exhibit No. 1, at pages 13 and 14, accounts 31 and 34, under the head of "Maintenance of Equipment," contains a statement that the amount of repairs attributable to "line" or "terminal" service (except accident repairs) is wholly a matter of opinion which must be determined by experts who, because of their experience, are properly qualified to make such estimates. It, therefore, was submitted by letter ballot by the chairman of the General Managers Association to its members as to the proportions properly chargeable to

"line" and to "terminal," and the average of such expressed opinions has been used in the assignment under these two classes. The submission of the question was accompanied by a full explanation of exactly what, under this formula, constitutes "line" and "terminal" services, respectively. The proportions thus arrived at were 64.94 per cent "line" and 35.06 "terminal" in the division of passenger train car repairs, and 36.03 "line" and 63.97 "terminal" in the division of freight train car repairs. The exhibits of the appellees were based on the divisions prescribed in the quotation from the formula. A question having been raised in regard to the correctness of the formula, on the view that it was not consistent with the formula recommended in "The Economic Theory of Railroad Location," a book written by A. M. Wellington in 1877, the appellees engaged Mr. W. E. Symons to make investigations and report on the subject.

Mr. Symons was well qualified to speak on this matter. He is a mechanical engineer of national reputation; has had large experience in designing and constructing engines and cars. His skill and judgment in such matters is sought by railroad owners and officials throughout the entire country. A short statement of his experience in this particular line of work made by him at request of counsel appears at pages 465-468 of the record. He has no regular railroad connection, but maintains an office in Chicago as a consulting engineer, and is employed as an expert by railroads all over the country, in connection with designing, construction and operation of locomotives and cars. He made an independent investigation of the matters involved here and his views on the subject are stated in the following extract from his testimony:

"I was called upon a short time ago to make an investigation and reach a conclusion with respect to the contributing causes making necessary repairs to railway equip-

ment, including locomotives, passenger and freight cars. I proceeded upon that work and have covered it pretty thoroughly.

My study embraced primarily securing information from the railways interested with respect to the actual expense of repairing a certain number of freight and passenger cars. I took those items of expense of repairing individual cars and subdivided or allocated them, assigning a portion to line and to terminal, having previously subdivided the car or engine into eight items with the locomotive and twelve or thirteen items with the car, which items correspond to the essential parts or elements representing the physical anatomy of the unit in question.

The expense of repairing each of these items was then subdivided or allocated as between line or terminal on a percentage basis, in the cars using the actual cost of repairs, as shown by the owning companies; with the locomotives, however the actual cost of repairs not being available, I took the average cost of all locomotives in the United States for the year, as shown by the reports, subdivided the expenses between line and terminal in the same manner as the cars; and then, as a test of the accuracy of the subdivision, I had the benefit of and used a series of time studies which had been made by the line at interest, showing the actual time locomotives are in service, hauling trains, the actual time at stations doing work, and time waiting for trains and for other delays.

A check or comparison of the conclusions reached was practically the same, so that the use of the time studies in connection with my subdivisions confirmed the percentages I had arrived at as being correct.

I have been strongly of the opinion for many years that about eighty per cent of the expense of repairing freight cars was due to rough treatment and about twenty per cent due to the use of the car under normal conditions of train movement.

In taking up this study I secured from the lines at interest statements showing the actual cost of repairs to a number of freight cars. I then took from those representative cars which, in my opinion, would about represent the present complexion of the equipment, having regard to material used in their construction, which includes wooden frame box cars, steel underframe box cars, wooden underframe coal cars,

steel underframe coal cars and wooden flat cars. So that the figures used would be fairly representative of the equipment now in use and that has been used for some years.

I then subdivided the expense items under twelve headings, which represent, in a general way, the physical anatomy of a freight car—the twelfth, however, being miscellaneous.

I then allocated or subdivided each expense item as between line and terminal, basing this division on my judgment as the result of practical experience of some twenty odd years, in the designing construction, puchase and maintainance of equipment, and with particular reference to my more recent studies while working in the capacity of a neutral expert, in all of which cases I have been entirely free to ascertain and cast up the facts as found, not being influenced in any manner by the policy of any of the companies at interest.

In taking these cars, I took a total of twenty-eight, using that number, and I secured as a result of this allocation between line and terminal an average of 75.7 per cent to terminal and 24.3 per cent to line; having in mind, however, that certain damage is done to cars in line work, which I have estimated to be about 10 per cent of the cost of repairing cars —that is, about 10 per cent of the cost of repairs is the result of rough treatment in line work, which consists of making up and breaking up trains; so it was proper to deduct that amount from the 75.7 per cent, which I did, adding it to the line expense, giving me a final figure of 35 per cent line and 65 per cent terminal."

"I think it would be proper for me to state that this division of 24.3 per cent and 75.7 per cent is the result of my analysis of these cars, showing the percentage of expense due to ordinary use and that chargeable to rough handling or abuse. But having in mind, as previously stated, that some of the rough handling or abuse of cars was occasioned under line treatment, such as the making up and breaking up of trains, it is proper to remove that portion of it and charge it to the line. As I knew of no way to separate that prior to the analysis, I made my analysis complete and then deducted what in my judgment was a fair and reasonable amount, *i. e.* 10 per cent.

"Now, answering your question direct, as to the rough treatment or abuse as distinguished from ordinary normal

use: It consists principally of rough switching of cars, 'cutting' them off, as it is termed in station work, at a considerable rate of speed so they are thrown down against other standing cars, causing each time an impact or concussion similar to that of a collision, only on a somewhat smaller scale. Frequently the draft gear and other essential parts of the car are damaged more in one operation of this kind than the car would suffer if hauled in ordinary train service for months or for perhaps years. These operations are repeated so often and frequently that the combination of them results in the destruction of many of the most essential parts of the car and those most expensive to repair.

"This rough treatment, almost all of it, is in what we call terminal work. Some of it is on hump yards; a great deal of it is where we have individual switch engines doing field work, where the cars are 'kicked' in, as the switchmen term it, at high rates of speed, and not ridden down by brakemen to prevent them striking; and, as a result of their coming together, the car is damaged, not only the body of the car but the truck.

"Q. Is damage more apt to occur at terminal points than on the line?

"A. The work at terminals, in yards, is more destructive to cars than the line work, for the reason that switch engines doing yard work do not use the air brakes to decelerate the speed of cars. They are pulled out over what is called a lead, and then cut off on return in such numbers as may be desired to make the proper classification and thrown into various tracks. And very seldom are they ridden down by the field men.

"While in line work, particularly in trains, most of the switching is done with the air coupled up, because it is done with a completed unit or train going over the road, and by using the air in switching there is less destruction of cars. * * *."

"In making an analysis of the contributing causes necessitating repairs to the passenger equipment I followed the same general plan, or fundamental principles, as in the freight cars, securing from the roads in interest copies showing the itemized expenses involved in repairing various kinds of their cars which would fairly represent their equipment.

"I then subdivided, or divided, the essential elements or parts of the cars under thirteen headings, twelve of which represent the physical anatomy of passenger equipment.

"I then took the amounts expended on each item or part and subdivided that between line and terminal as, in my judgment, fairly represented the uses of the property or the contributing causes making necessary the repairs in question.

"I used a total of twenty cars, which I considered representative of a typical passenger train, with the mail and express cars eliminated, for the reason that it is taken care of on the car foot mile basis; and the Pullman car, for the reason that the railway company does not repair it. That leaves the units to be dealt with which came within the scope of my investigation.

"I attached to my summary a sample sheet showing the individual distribution of one car, which is the same as was used with all the others. My divisions were as follows: * * *."

"Q. What proportion of the cost of passenger car repairs do you charge to line and what proportion to terminal? I do not think that has been stated.

"A. 82½ per cent to line and 17½ per cent to terminal. That is based on the belief that passenger cars are more evenly worn out than any other equipment, and that about 82½ per cent is chargeable to train running or line service, and about 17½ per cent of it to terminal. * * *."

"Q. Will you take up next the expense of locomotive repairs, taking up first the freight and then the passenger, and state in what proportion that expense would be chargeable divided between line service and terminal service.

"A. In making an analysis of locomotive repairs the same fundamental principles were followed that were used in the case of the cars. The companies, however, do not all have ready for access or use the cost of repairing individual locomotives. I, therefore, took the average cost of repairing locomotives in the United States for the fiscal year of 1913, as shown by the government records. I then assigned a proportion of that cost to locomotives on a percentage basis, this division being under eight items representing the physical an-

atomy of a locomotive—that is, it covers the principal parts. The amounts then were assigned to terminal and line service on a percentage basis, corresponding to what in my judgment represented the contributing causes making necessary the repairs in question. * * *."

"Assuming that there are four or more engines performing what is termed through freight service, in comparison to one that does local or terminal work, the average would be 66.72 per cent line and 33.28 per cent terminal, this being so close to 66 per cent and 34 per cent that the figure was placed at 66 per cent line and 34 per cent terminal. * * *."

"I used the time studies (made by the railroad in the test) and worked them out on a percentage basis, and, applying them to the locomotive I got practically the same results, 66 per cent and 34 per cent. It checked so evenly that it fully confirmed my conclusion reached through the separation of the various physical parts of the locomotive. * * *."

"A. In making an analysis of passenger locomotives the same method was employed as just described with respect to freight locomotives, the average cost of repairs to all locomotives in the United States being taken as a basis on which to distribute these expenses as shown on the statement of distribution of repairs to engines.

"The difference in the amount assigned to the various items, that is, the eight items, as between local and through passenger trains checks very closely with the differences observed with the freight engines, and for the same reason, namely, that the local passenger engine stops more frequently, if not much more frequently, in proportion to the mileage made than the local freight engine, and while it does not do any switching except in rare cases, yet the close proximity of stations on many lines results in the local passenger engine performing what might be called a stopping and starting service over the entire district, the stations on some roads being on an average of only four miles apart and in some cases a little less, so that I find the contributing causes making necessary repairs to a local passenger engine to be 36 per cent terminal and only 64 per cent line, while with the through passenger engine I find the terminal expense to be about 29 per cent terminal and 71 per cent line, and, as there is a preponderance of line engines, or engines in through train ser-

vice, as compared with those in local service, I find that by averaging these on pretty much the same basis as used with reference to the freight engines, it gave me an average of 70 per cent line and 30 per cent terminal." (R. 466-484.)

Mr. Symons filed summaries of his division of freight car repairs as exhibits 43 and 44 and of passenger cars as exhibits 46 and 47, of engines in freight service 48 and of engines in passenger service 49. The difference between the proportions of this class of expense assigned to "line" and "terminal" services, respectively, in the summaries prepared by Mr. Symons and the divisions contained in the formula at pages 13 and 14 is set out on the first sheet of Exhibit No. 51. The effect of applying Mr. Symons' percentages to the locomotive and car repair expenses of the railroad in Arkansas, in each of the periods covered by the exhibits in this case, is set out on sheet 2 of Exhibit 51, from which it appears that the net increase or decrease in intrastate expenses is not in any of the periods of sufficient importance to make a perceptible change in the figures shown in Exhibits 22, 24, 25, 26 and 27-A.

This is perhaps the only question in this case that depends upon expert opinion. No one can know, except as he may determine from his judgment based upon experience, how these particular divisions should be made. The only evidence introduced in opposition to the formula, or the summaries prepared by Mr. Symons, was based on the Wellington formula referred to a while ago. Mr. Symons knew Mr. Wellington, and testified that he was an able engineer and his book was considered an authority in its day, but that the conditions in railroad operation, and changes in equipment, were so great

that many of the views expressed in his book, and particularly his formula, for assigning repairs of this character could not be applied at this time.

This formula was not introduced in the record, but the methods of division contained in it are set out in the table, which appears on the first sheet of Exhibit F filed by Mr. Simson on behalf of the appellants.

Exhibit F is an attempt on the part of Mr. Simson to translate certain tables set out in a paper read by Mr. J. B. Berry, a civil engineer, and at the time chief engineer of the Union Pacific Railway, at a meeting of civil engineers held in 1904. The paper was a discussion of the expense of relocating parts of the line of the Union Pacific Railway in 1904. Mr. Berry was attempting, in the paper referred to, to estimate the saving in the cost of equipment repairs that would result from the relocation of the tracks of the Union Pacific Railway. It was necessary for him to consider the effect upon this cost of the physical characteristics of the railroad, such as curvatures, grades, etc. Not being a mechanical engineer himself, he used the tables prepared by Mr. Wellington, and also tables prepared by a gentleman by the name of Webb. He was not discussing, or concerned in the subject involved in Mr. Wellington's formula, further than the application of the tables prepared by Wellington might aid him in determining the effect the change of certain grades and curvatures would have upon the cost of equipment maintenance. Having no knowledge on the subject as a mechanical engineer he simply took up the formulae of Wellington and Webb and used them, not for the purpose of indorsing them, on any investigation made

by him, because Mr. Berry would not have felt capable of passing on that question, but as a man would use any treatise prepared by another on a subject upon which he himself had no expert knowledge. By using these tables counsel very adroitly attempted to make Mr. Berry a witness in this case, without taking his testimony, and by having Mr. Simson, a man who confessedly had no knowledge whatever upon the subject, to interpret the tables prepared by him, to make him a witness in regard to highly scientific mechanical question upon which Mr. Berry, if called, would have declined to testify, on the ground that he was not possessed of sufficient knowledge or experience.

This was the object in preparing and introducing Exhibit F. The first sheet contains the Wellington tables. The following sheets are an attempt on the part of Mr. Simson to convert various tables based on the use of Wellington's formula into a division of cost of equipment repair between "line" and "terminal" services. Mr. Berry, no more than Mr. Wellington, had any knowledge or thought of such a division, and Mr. Simson had no qualification to interpret and apply the tables prepared by those gentlemen, as he attempted to do in this exhibit. He thus describes his effort in his examination in chief:

"I had some curiosity to know how a distribution of maintenance of equipment repair items for locomotives, passenger cars, and freight and work equipment, compared with the Berry tables as shown in the proceedings of the Fifth Annual Convention of the American Railway Engineering and Maintenance of Way Association, held in Chicago March 15 to 17, 1914.

"I do not pretend to sustain the tables from any technical knowledge of engineering matters.

"I have taken those tables, and, as near as the information there given would permit—and I think it is fairly close—have assigned to line and terminal the percentages of the maintenance, following the definition of line and terminal as given in the formula, Exhibit No. 1.

"I have in this exhibit quoted the full tables as shown in Mr. Berry's table. On page 2 of Exhibit F, I have shown the assignment of these percentages, which represent distribution of contributing causes, to line and terminal according to the best definition I could make of the terms employed.

"Time and exposure, being applicable to both line and terminal, has been apportioned between the two upon the basis of the percentages previously assigned; in other words, an overhead method, if you please." (R. 606, 607.)

Extracts from Mr. Berry's paper were read to him on cross-examination, in which it was stated that estimates were made in the various locations of the changes in the line of railroad, and statements prepared, establishing comparisons of the physical characteristics and the estimated annual saving in the operation of the proposed lines as compared with the existing lines, and its effect in reducing operating expenses; and the statement by Mr. Berry in his paper that these comparative estimates were made in accordance with the method given by Mr. A. M. Wellington, using his classification of expenses and percentages showing the effect of changes in gradients, distances, etc., which were applied to the estimated cost of operation on the Union Pacific for a period of years, and containing this further statement:

"In order to obtain the value of the details of location for the use of engineers in the Western States, the general methods of both Mr. Wellington and Professor Webb are applied in this paper to the operating expenses of the Union Pacific Railroad." (R. 755.)

These matters were brought to Mr. Simson's attention and he was asked if he did not understand that Mr. Berry, being a civil engineer and not a mechanical engineer, used these formulae simply for the purpose of developing the idea he had in mind as any one would use an authority at hand, and he answered:

"I have no idea of the process Mr. Berry followed in producing his figures. Mr. Berry was an engineer of some reputation, but how he got his figures I do not know." (R. 755.)

Mr. Nay, who knew Mr. Berry very well, having been associated with him during the time the latter was chief engineer of the Chicago, Rock Island & Pacific Railway, was questioned in regard to his qualifications with reference to mechanical engineering, and stated:

"Mr. Berry has not had much experience in the maintenance of equipment. I know Mr. Berry personally very well, and I know that I am not saying anything about which he would not agree with me when I say that his life has been spent as a civil engineer * * *.

"He is a high-toned, straightforward gentleman, and I like him, but with all that, I don't believe that his experience in maintenance of equipment has been anything like his experience in construction work and in the maintenance of way and structures." (R. 361.)

Mr. Symons was questioned in regard to the Wellington formula and testified that he knew Mr. Wellington; that he was an able civil engineer and railroad man, and that his book was respected as an authority in its day. He then made the following statements:

"Much of the data on which Mr. Wellington predicated his formula was secured from the Atlantic & Great Western Railway, which was originally a broad gauge road running

from Salamanca, New York, to either Columbus, or Dayton, Ohio.

Notwithstanding the fact that the freight cars built at that time, and which he used in his formula, were broad gauge, they cost only about $500. They were of about 20 to 25 ton capacity.

Q. You speak of 'broad gauge;' you mean broader than the present standard gauge?

A. Yes; I think it was six feet, but I am not sure.

For years they had to use a hoist in handling the passenger equipment and lifting the car bodies off their trucks so they could run their sleeping cars and passenger cars through from New York, Buffalo to Cincinnati. Some of the old hoists are there yet; I have seen them, or evidences of them.

Wellington's formula made at that time, and using equipment of that type and capacity, and also considering the conditions in effect at that time, would have no application to present day conditions at all.

As an illustration, he assigns a certain percentage of contributing causes to making up and starting of trains. It was customary in early times for the engineer and fireman to get up in the morning and build a fire in their locomotive; while steam was raising they would get their breakfast; then they came back and switched out their trains, and after they had switched a long time then they took their train and proceeded over the road. There are no such conditions nowadays at all. There were very few yards in those days except the yard that was used for the train crew to use when they came in at the end of their run. Mr. Wellington's table was based upon conditions that have so completely changed, both with reference to the railway operation and with respect to the character of equipment and the manner of handling it, that it would not be applicable at all, although the fundamental principles are good and Mr. Wellington was one of the brightest and best railway men the country ever produced. His book has a foremost place in my library. I prize it highly. His tables on equipment, however, are completely out of date.

In 1907, I made an examination of a report upon the equipment and facilities for its maintenance of the Erie Railway. In making that examination it was necessary for me to personally inspect every car, or some of each series of cars owned, and among the cars still carried on the company's schedule of equipment were some of these old twenty and twenty-five ton wood box cars, originally the property of the Atlantic & Great Western; later becoming the property of the New York, Lake Erie & Western, when the Erie bought the Atlantic & Great Western, and still later being merged into the Erie system.

These cars were being used for boarding or camp cars—

Q. Were those the cars Wellington made his test on?

A. They were built at that time and in that period.

Q. The same class of cars?

A. Yes, the same class of cars, and I would be safe in saying, I think, that these were the cars because they were the only cars at that time that the Atlantic & Great Western owned that were still in existence.

I recommended that they scrap all of them and write them off of the books in order to preserve the integrity of the company's capital account, which they have since done except for a few that have been lifted off the trucks and have ceased to be cars, being now used for what is termed switch shanties and for boarding purposes.

They were a good car in their day, but there is no such equipment used now, and a distribution of contributing causes of repairs to equipment based upon cars or locomotives of that kind and upon conditions of that period is not a good rule to attempt to use now.

Another very important feature was that in that time all cars had what was called a link and pin coupler, making it necessary for the brakeman or conductor to go between the cars to where he made the coupling and they were handled very carefully compared to what they are now. Since the automatic coupler has come into use, and it is not necessary for the trainmen to go between the cars, the destructive effect of

switching has gone up enormously. It did not obtain in those days. If it had the cars would not have been alive for me to have seen them in 1907" (R. 485-486.)

Mr. Simson very frankly testified that he had no knowledge that would qualify him to deal with the matters embraced in Exhibit F. For instance, he testified at pages 606, 607: That Exhibit F is based on the Berry tables shown in the proceedings of a convention of the American Railway Engineering and Maintenance of Way Association, March, 1904. That he did not pretend to sustain the tables from any technical engineering knowledge. He had taken the tables and made a line and terminal designment of the percentages shown therein.

In Exhibit F he had shown his assignment to line and terminal of these contributing cause percentages which appear in the Berry tables. Had done this according to the best definition he could make of the terms employed in the Berry tables.

Had apportioned Mr. Berry's time and exposure percentages as an overhead item. Considered this to be practically the same as depreciation. Had classified Berry's "stopping and starting" as "terminal." This is not entirely accurate. Part of it should have been assigned to 'line,' but I could not divide it.

Assigned "getting up steam and terminal work" all to terminal. I assigned "average curvature" all to 'line;' I don't think this is entirely accurate. There is some curvature in terminals. I had no way of dividing it.

He further testified that he did not know that the Wellington formula was dealt with only by mechanical engineers;

that he did not know Mr. Berry's purpose in using the Wellington and Webb tables; that he did not know what Berry's "stopping and starting" consisted of. A reading of his testimony on cross-examination beginning at page 757 of the Record will disclose that he had no knowledge whatever on the subject with regard to which he was testifying—a subject of a highly complicated and technical character that only persons of a high degree of training and knowledge are capable of dealing with. In this connection, and in conclusion upon this point, we call the attention of the court to the findings and summing up of the evidence of these two witnesses contained in the opinion of the court below at page 920 of the Record.

THE EVIDENCE OF MR. F. NAY.

Counsel attempts to compare the testimony of Mr. Nay, in this case with his testimony in a former case of the St. Louis, Iron Mountain & Southern Railway Company, and severely and very unfairly criticise him in that connection. The case referred to arose several years ago. An imperfect test made during the month of October, 1908, on another railroad was introduced in evidence by the Railroad Company, by which the test had been made. While Mr. Nay was on the stand in that case, he was questioned in regard to the value of the test, and testified that he did not believe that the month of October, or any one month, should be taken as representative of any six or twelve months, where you wish to obtain accurate results. That October was not a normal average month because the business in that month was the heaviest in the year. When asked, in effect, if the testimony he then gave was con-

sistent with his testimony with regard to the test period in this case, he pointed out the difference, that in this case a period of two continuous average months was taken; that two consecutive months afford a better test than one month, and that his judgment, at this time, was also influenced to an extent by the similarity of the results shown by the two months and the four months tests made under his direction on the Chicago, Rock Island & Pacific Railway. (R. 328, 329, 330, 371, 372.)

Attention was called to a statement made by Mr. Nay in the case referred to, that he thought it would be remarkable if the character of state and interstate tonnage, and all the conditions surrounding it, were the same. He explained that in making the statement he had in mind the difference in the proportions of carload and less than carload, intrastate and interstate freight, and that the question of delays in transit growing out of congestion, which had occurred on the line of the railroad in that case, the resulting lap-overs, and the relative effect thereof on intrastate and interstate freight, was involved. His statement in regard to this was as follows:

"I am not positive now, because, in order for these percentages to be of value, supposing their condition had been met outside of the lap-overs, and they are correct in every other respect except the lap-overs; in order for them to be of value, considering the lap-overs, it would be necessary not only for the state and interstate to move coincidently, or be delayed coincidently, if there was a congestion, but it would be necessary for them to move coincidently on local and through trains. If traffic that moves on through trains is delayed, it must be delayed in the same proportion as traffic which moves on local trains, etc." (R. 375.)

This reference will give the court an idea of the difference in the conditions that existed in the two cases in which his tes-

timony was taken. He was further asked if he did not state in the former case that it would not be fair to take the last six months of a year to be representative of the whole twelve months, and showed that he was then testifying in regard to the net earnings, that he had so testified and still had the same view, and then pointed out the distinction between using one period for the purpose of determining the gross and net earnings, and the relations thereof, during another period, and of determining the relation between the different classes of traffic by ascertaining operating results in the handling and moving of traffic, and said, while it would be foolish to assume that the earnings of any previous twelve months would be six times what they were in a shorter period, it may be assumed that the relation between the expenses of different classes of traffic would remain substantially the same where the conditions are similar, pointing out very clearly the distinction which counsel seems to have overlooked between the two propositions. His attention was next called to a statement made before the Interstate Commerce Commission, that he thought the net operating revenue for a given month was an index of the entire year. The connection in which the statement was made is shown and explained by Mr. Nay at pages 378-9 of the record. It is not necessary to go into it now further than to state that the matter arose in an application for increased interstate rates before the Interstate Commerce Commission, and Mr. Nay, having furnished the Commission with the earnings of his road for some ten years, was putting into the record some additional compilations, including seven weeks additional, and the question was asked, and the statement made with reference to the effect of the figures contained in his earn-

ings sheets as an index to whether good times were coming, which was a material question, it having been asserted that business was improving, and that the railroads did not need the increase in rates they were asking for because "times were improving," and Mr. Nay's statement was made from that point of view, and no other.

It is not worth while to pursue the matter further. The court will find, upon reading the evidence referred to, that the statements in Mr. Nay's former testimony were made with reference to particular conditions that did not exist and were not involved in this case, and which do not appear upon the partial extracts from his evidence, or else, that it related to matters in regard to which he had upon further investigation modified his former opinions. At the time the evidence in the former case was taken, he, in common with many railroad men, believed the gross revenue was the best general factor for dividing the common expenses, but when that basis was eliminated by the ruling of the court in the Minnesota and other cases, and it was announced that a use unit must be used, a new line of investigation was adopted by those charged with the duty of investigation, including Mr. Nay. It is manifest that he gave very careful and detailed attention to it and caused the series of tests, about which he testified, to be made, and it is not surprising, or to his discredit as a witness, that he should, and did in the course of the investigation, have occasion to modify his views in regard to some of the question involved. The whole matter is very well set out in the suggestions of the court, in whose presence the evidence was taken, at page 399 of the record, on objection to the relevancy

of the testimony. The extracts used by counsel in questioning Mr. Nay in this connection show how misleading, and calculated to cause misunderstanding and erroneous impressions, is the practice of producing partial extracts from former evidence of a witness in a case of this character.

APPELLANTS' EXHIBITS A, B, C, D AND E.

Exhibits A, B, C, D and E, filed by the appellants, were prepared for the purpose of showing that in the exhibits filed by the appellees an excessive cost per ton per terminal on freight, and per passenger per terminal on passenger, traffic, had been charged in the State of Arkansas. The manner in which the appellants attempt to do this is to ascertain the cost per ton per terminal and per passenger per terminal in Arkansas, and apply the cost so developed to the tons and passengers handled upon the entire system, assuming that the cost per ton per terminal on freight and per passenger per terminal on passenger traffic was the same in the State that it was throughout the system.

These five exhibits constitute a series for the purpose of establishing that proposition, and are therefore properly treated together.

By the application of the Arkansas terminal unit costs per ton and per passenger to the tons and passengers of the entire system, and the Arkansas costs for line service per ton mile and per passenger mile to the ton miles and passenger miles of the entire system, the appellants, in Exhibits B, C, D and E, built up a constructive total operating expense for the entire system which was considerably in excess of the actual

operating expense incurred by the railroad on its entire mileage, the conclusions drawn from the results obtained being that because the application of Arkansas costs per unit of traffic to the traffic units of the entire railroad produced more than the total actual operating expenses, therefore the Arkansas operating expenses, as apportioned between line and terminal service, in the appellee's exhibits were in error and excessive.

In Exhibit 4 filed by the appellees there is described in detail a method, the principles of which are outlined in Exhibit 1, for the assignment of interstate freight and passenger revenues to the State of Arkansas as distinguished from the remainder of the railroad. This plan, in brief, provided that in making a mileage pro rate between the States, of interstate freight and passenger revenues, an allowance in the shape of constructive mileage should be made to the States in which interstate traffic had its origin, or destination, on the rails of the St. Louis & San Francisco Railroad. The theory of this allowance, as is explained in the exhibits referred to, was to compensate for the cost of terminal service in originating or terminating the handling of this interstate traffic. No such allowance was necessary in connection with the Arkansas intrastate traffic, all of the terminal expense incurred in connection therewith being automatically localized to the State of Arkansas.

In making the constructive mileage allowance to compensate for terminal costs, such allowance was determined in terms of mileage based upon the relationship of the cost in Arkansas of handling one ton in a terminal or one passenger

in a terminal to the cost of hauling one ton one mile or one passenger one mile over the railroad in Arkansas in "line" service.

The sole purpose of determining the cost per ton or passenger for terminal service, and per ton mile or per passenger mile for "line" service, separately, in Arkansas, was to arrive at a basis for this constructive mileage equivalent compensation for terminal costs on interstate business; and the total terminal costs and total line costs in Arkansas were determined, not upon the number of tons or passengers handled at terminals or hauled one mile over the railroad, but upon actual time, and other related use bases, in accordance with the facts on each train in each yard and at each station. The costs within the State of Arkansas so actually determined in the manner and under the forms described in the appellees' exhibits were subsequently, as is explained in those exhibits, apportioned to the intrastate and interstate traffic within the State, without alteration, increase or diminution. In appellants' Exhibit A the total terminal costs, freight and passenger separately, and the total line costs, freight and passenger separately, set forth in the appellees' exhibits, as appertaining to all of the traffic in the State of Arkansas, are accepted and used by the appellants.

In dividing these terminal costs and line costs, freight and passenger separately, to get a cost per ton and per passenger per terminal, and per ton mile and per passenger mile for line expense, the appellees counted the intrastate tons and passengers in Arkansas as having two terminal handlings and the interstate tons and passengers as having but one ter-

minal handling within that State, such count of tons and passengers, as previously stated, being made simply for the purpose of getting a terminal equivalent cost to pro rate interstate revenue. The basis of counting tons and passengers by the appellees for the purpose indicated, was slightly in error. In the data submitted in the appellees' exhibits was shown the actual number of uses of terminals made by interstate and intrastate, tons and passengers in Arkansas, some interstate tons and passengers actually receiving more than one handling in the State, and some intrastate tons and passengers actually receiving more than two terminal handlings in the State, while some interstate tons and passengers received no terminal handling in the State.

The appellants, in Exhibit A, revised the number of ton and passenger handlings from one handling per interstate unit and two per intrastate unit to the actual terminal handlings shown in the appellees' data, and used this revised number of handlings in conjunction with the Arkansas total terminal and total line costs, determined by appellees, to produce a new average cost per ton and per passenger per terminal in Arkansas, without in any way changing the total terminal cost or total line cost assigned by the appellees to the freight and passenger business in the State of Arkansas, and subsequently divided by the appellees between the interstate and intrastate traffic.

The cost per ton and per pessenger per terminal so arrived at by the appellants in their Exhibit A is subsequently applied by them in the calculations set forth in their Exhibits B, C, D and E, which may be briefly explained as follows:

In these exhibits there has been applied by the appellants to the number of tons and passengers handled upon the entire St. Louis & San Francisco Railroad in seven States, covering a mileage of over 4,700 miles, the cost per ton and per passenger per terminal, and to the ton miles and passenger miles of the entire line, the cost per ton mile and per passenger mile for line service, of the railroad in Arkansas, as developed by the appellants in Exhibit A, based upon the appellees' showing of total line and terminal costs, respectively, within the State of Arkansas alone. The resultant figure set forth in Exhibits B, C, D, and E, the product of applying Arkansas terminal costs and line costs to the tons, passengers, ton miles and passenger miles, handled on the whole railroad, is a hypothetical cost or total operating expense upon the entire railroad, which, as these four exhibits show, is in excess of the actual operating expenses incurred by the entire railroad in the periods covered by the exhibits. The theory upon which the appellants made these calculations, and produced these hypothetical results, was that the cost per ton and per passenger and per ton mile and per passenger mile for terminal and line service, respectively, was no greater in Arkansas than upon the railroad as a whole.

We may say in passing, that for the purpose for which the terminal equivalent mileage allowance was used, that is, in determining the interstate revenues assignable to Arkansas, there was in fact no violence done to the interstate revenues assigned to Arkansas, as shown by the testimony of Mr. Hamilton and by the admissions of Mr. Simson, the witness who produced the appellants' exhibits now under consideration.

On page 596 and 597 of the printed record, Mr. Simson gave examples in specific terms of dollars and cents of the prorate of interstate freight revenue made by the railroad on the basis of the constructive mileage allowance to compensate for terminal costs. In most of the examples he cited, he dealt with large sums of money—total revenues to be prorated—giving the impression that there was some very large difference to be adjusted by reason of the change in the mileage allowance equivalent as per the appellants' Exhibit A.

On page 597, Mr. Simson admitted in answer to questions by counsel as follows:

Q. Do those examples you have given affect the intrastate earnings?

A. Not at all. Not the purely intrastate.

This foregoing question and answer referred to the freight figures. On page 598, referring to the passenger figures, the following question and answer by Mr. Simson appear in the record:

Q. All those you have referred to in passenger affect the interstate only?

A. Yes, sir.

Q. Do they affect the intrastate in Arkansas at all?

A. No, sir; it is all interstate.

He later admitted, upon cross examination, that the very large sums of money referred to in his illustrations on pages 597 and 598 in their effect even upon *interstate* revenue assigned to Arkansas made but a negligible difference. See

pages 722 and 723 of the printed record and, also, as an illustration, the amount of $669,000 referred to on page 597. When the prorate of this sum between Arkansas and several other States was corrected by Mr. Simson to the basis of his changed mileage equivalent allowance, he finds the difference is only one-tenth of one per cent, or the sum of $669. These calculations have relation only to the interstate revenues and this is again admitted by Mr. Simson on page 725, where he states that they have no effect whatever upon the intrastate revenue in Arkansas, and that "all of the revenue on intrastate shipments is assigned to Arkansas."

And again on page 776 where he states, "It would not affect the distribution of intrastate revenue to States," and upon page 777, where he states that it has relation solely to the prorate of interstate revenue between States.

APPELLANTS' CONTENTION THAT THE ASSIGNMENT OF TERMINAL EXPENSE UNDER THE FORMULA IS EXCESSIVE IS NOT SUSTAINED BY THE FACTS.

Mr. Simson testified that the figures developed in exhibits A, B, C, D and E indicate that the appellee's division of expenses between line and terminal is not correct, and that the formula is unsound; and, it is broadly asserted at page 60 in appellants' brief, that the formula is mathematically demonstrated by these exhibits to be wrong. This is their principal and most confident ground of attack upon the formula. The contention is not only untrue—it is contrary to, and inconsistent with, all the evidence as to the manner in which the terminal expense is first made up and subsequently divided among

the traffic units (intrastate and interstate passengers and tons), and the conditions of freight and passenger traffic in Arkansas as compared with the system, as to density and the length of haul.

Terminal expense embraces the cost of every character incurred in originating or terminating, receiving or delivering, traffic—freight or passenger—at the beginning and end of their haul or journey on the rails of a given carrier. It embraces, not only the proportion of wages of station, yard and train employees, properly chargeable to terminal service and the proper proportion of the cost of material and supplies and incidental expenses that go hand in hand with the activities of such employees, but also the maintenance of tracks, buildings, equipment and other facilities (or the proper proportion thereof) devoted thereto, as well as the related proportion of overhead, supervisory and general expenses. (Hamilton, Evidence, R. 865.)

The terminal expense was not determined on the basis of tons and passengers handled; that is to say, these traffic units were not in any way used as factors in the assignment of expenses to terminal service. On the contrary, the assignment of expenses to terminal service was based upon the time of employees devoted to that character of service, with the use of the facilities of every kind proportioned directly to the activities of such employees, as indicated by the employment of their time, regardless of the number of tons or passengers handled. Wherever the entire time of an employee, or the entire use of a facility was devoted to terminal service, all of such employee's time and all of the maintenance of such facility was

charged to terminal service. Wherever the time of an employee, or the use of a facility was devoted to both line and terminal service, a portion was assigned to terminal service which bore an exact relation to the time devoted to that service. It should be apparent to any one that, under the formula filed as Exhibit 1, and upon which the appellees' exhibit are entirely based, it would be impossible to assign any expenses as between line and terminal by using traffic units as factors for such division. This for the reason that line or haulage expense must necessarily be incurred in connection with the movement of traffic between terminals, which involves the element of distance, which element can only be expressed in the unit of *tons one mile or passengers one mile.* Tons and tons one mile can not be used as common factors to divide an expense incurred on account of the freight traffic, between terminal and line, nor the passengers and passengers one mile be used as a common factor to divide passenger expenses between terminal and line. It is entirely practicable, however, to determine the amount of time devoted by employees and the amount of time during which facilities are used, in handling freight in terminal service and passengers in terminal service, and freight in line service and passengers in line service, and it is upon this basis of the time use of the property that the terminal expenses in the appellees' exhibits were arrived at. (Bearing in mind, however, that each item of expense which was definitely and explicitly line or terminal, was directly assigned to these respective services in accordance with the facts, and that only the items of expense incurred jointly for line and terminal service were apportioned on the basis of time devoted to each.) This is explained and illustrated in Ex-

hibit No. 2, and the forms contained in Exhibits 2-A to 2-K. Upon these forms, station agents, foremen of switch crews, section foremen in charge of track maintenance, conductors, special clerks placed in yards and upon trains for the purpose of collecting and reporting information, made daily reports during the test period, showing how much time in all of these classes of service was devoted to terminal work and to what extent facilities were used in that service, such as tracks, buildings, equipment, etc. These reports covered also the terminal work done by road trains. These reports were collected and verified, and the total terminal expense on the railroad in the State of Arkansas was determined, by charging thereto the wages of employees and the cost of materials and supplies used by them, in proportion to the time devoted by the employees to terminal work or the use made of the facilities, buildings, etc., in that service. Now, when the terminal expense had been ascertained, in the manner described, for freight and passenger service separately, then the ton units and passenger units came into play and were used, when properly classified between intrastate and interstate, as factors to divide the freight terminal expense and the passenger terminal expense between intrastate and interstate freight and passenger traffic respectively.

The separate freight and passenger intrastate and interstate terminal costs, in Arkansas, appearing in the appellees' exhibits were ascertained in careful and minute detail in the manner herein described. The appellants do not question the accuracy with which these terminal costs were arrived at upon the bases described. They do, however, claim that the bases and methods used by the appellees in determining these ter-

minal costs were not proper ones. They do not attack them directly, but only by implication attempt to show that these bases are erroneous. This is the sole purpose of their Exhibits A, B, C, D and E, wherein they attempt to show that, because when the Arkansas terminal costs are applied to the tons and passengers handled upon the entire railroad in six other States in addition to Arkansas, and the Arkansas line costs determined by the appellees are similarly applied to the ton miles and passenger miles of the entire railroad, the constructive result produced is more than the total actual operating expenses of the entire railroad. The contention of the appellees is that their allocation of expenses to terminal service and line service in Arkansas has been made upon sound and proper bases and is correct, and that the underlying reason for the result produced in the appellants' Exhibits A, B, C, D and E is that Arkansas terminal costs and line costs per unit of traffic are higher than the average of such costs for the railroad as a whole, and that the reason for this is found in the lighter density of traffic per mile of road in Arkansas, and the shorter haul of traffic in that State as compared with the average for the entire railroad. Illustrations are given by Mr. Hamilton in his testimony as to the effect of lesser density and shorter hauls upon the unit cost of handling traffic. In many instances, the cost of maintaining and operating switch engines and maintaining terminal tracks and facilities and many other kind of expenses go on just the same, whether one or ten or fifty tons of freight, or one or ten or fifty passengers are handled. Take, as he says, a one-man station, where one man only is employed. The cost of his employment is the same whether he handles ten tons of freight or fifty tons, and re-

gardless of how the number of passengers handled at such station may vary from day to day. The total cost at a given station or in a given yard may or may not, and often does not, vary in anything like direct proportion to the number of traffic units. The volume of traffic handled at such a station or yard and the cost per unit of traffic depend very largely indeed upon the density of traffic, or the number of tons or number of passengers handled, among which the cost *actually incurred* is to be apportioned.

In this connection, there was offered in evidence, appellees' Exhibit No. 56, which was a statement of the cost per car handled in each of the yards on the entire railroad in the month of September, 1914. This statement, which is prepared by the railroad regularly each month in the conduct of its business, and was not prepared specially for this case, sets forth the actual cost of handling all cars in every yard upon the entire railroad. By dividing into such actual cost, the number of cars handled in each yard, there is ascertained the cost per car handled. In connection with this exhibit, we call attention to the following quotation from Mr. Hamilton's testimony (R. 886) in connection with the exhibit, and which illustrates the fallacy of the results obtained in appellants' Exhibits B, C, D and E.

"Exhibit 56 is our September, 1914, yard cost statement. It shows that on this entire railroad during that month, we handled 593,329 cars, at an average cost of 23.2 cents per car.

"In the yard at Fort Smith we handled 8,254 cars, at an average cost of 38.7 cents per car.

"Let Fort Smith typify Arkansas: That average cost at Fort Smith is ascertained by dividing into the actual money

spent at Fort Smith the number of cars handled in that yard. If you take that 38.7 cents and multiply the actual number of cars handled on the entire railroad by it, you find a constructive cost of $229,618, whereas, the actual cost as shown in this exhibit was $137,664. But that does not alter the fact that there was that actual cost incurred at Fort Smith. The parallel runs between that and our assignment of terminal cost in Arkansas. That cost was not built up on the number of cars handled at Fort Smith; it was built up on the number of switch engine hours that were worked there, as shown by the cost statement. That is what causes the expenses, not the number of cars we move. The cars were handled, it is true, as a result of working those switch engine hours, but to cut out 25 per cent, perhaps, of the number of cars handled might not have enabled you to reduce one single switch engine hour. That is your density of traffic proposition.

Now, let us take another illustration: It is Jonesboro, in Arkansas.

The cost per car at Jonesboro was 35.9 cents. If you apply that to the number of cars handled on the entire railroad you get a constructive cost of $213,005, as against an actual cost of $137,664.

The statement shows that in the month of September, 1914, at Jonesboro, we worked two crews, a day crew and a night crew. We paid those two crews for the services they performed. We had to keep them there to protect that yard, and we incurred an actual cost of $1,804. We handled 5,018 cars. Having to protect that yard with its light traffic density—let us assume the number of cars that came there for handling were diminished about one-half, or cut to 2,500—we could not take away one dollar of that actual expense in the Jonesboro yard, but the cost per car would have been twice as great. There is the Arkansas situation in our terminal cost versus the entire line.

The costs are not built up in the Jonesboro yard on the number of cars handled any more than our terminal costs in these exhibits are built up on the number of tons handled. The cost is incurred, true, as a result of the tonnage, and the cars in this instance, being handled, but it is not apportioned between line and terminal on the basis of the number of cars or tons. I can not make it any plainer."

For the year, 1913, the density of freight traffic for the entire railroad in seven States, was 639,906 tons one mile per mile of railroad; in the State of Arkansas, it was 545,957 tons one mile per mile of railroad, the Arkansas density being 20 per cent less than that of the entire railroad. In the same year, the number of passengers carried one mile per mile of road upon the entire railroad was 97,000, and in Arkansas, 75,000, the Arkansas passenger traffic density being about 30 per cent less than that of the entire railroad. The evidence shows that on some parts of the railroad, outside of the State of Arkansas, that freight traffic density runs from 2,000,000 to 3,000,000 tons one mile per mile of railroad per annum. The illustrations, made by Mr. Hamilton, show the effect of such a difference in traffic density upon the unit cost, terminal as well as line.

At pages 65 and 66 of appellants' brief, attention is called to the fact, in discussing their Exhibits A, B, C, D and E, that the traffic density, both freight and passenger in Arkansas, was less than that of the entire line, both in 1913 and 1907. An effort is there made to show that it would be proper to apply Arkansas unit costs to the traffic of the entire railroad and from the results obtained contend that the appellees' line and terminal unit costs in Arkansas were wrong, by quoting witness Simson's testimony to the effect that a difference of 20 or 30 per cent in the traffic density would have no appreciable effect upon the costs per unit of traffic. In this connection, counsel, at page 65 of appellants' brief, refers to Mr. Simson's statement that wherever the same number of trains are run, the cost of operation of the railroad would be practically the

same, regardless of the contents of the trains, in numbers of tons or passengers, and counsel seems to have drawn the erroneous conclusion from this statement of Mr. Simson's that the density of traffic has little or no effect upon the cost per unit of traffic. It is obvious that counsel has confused the volume of train service, or, as it might be called, the density of train service, with the density of the traffic hauled upon the trains. By this argument, he admits the truth of the very thing for which the appellees contend, which is that where total operating costs are, in a large measure, fixed, and traffic density or the number of traffic units handled is less upon one part of the railroad than another, a higher cost per unit of traffic actually obtains on that part of the railroad which has the lesser traffic density.

Unconsciously, or through a lack of a clear understanding of the proposition at hand, counsel for appellants has, in reality, by his own argument and his own witness referred to, proven the very thing which he set out to disprove, *i. e.*, that a lesser density of traffic necessarily means a higher cots per unit of traffic.

It would seem to be apparent from Mr. Simson's lack of understanding of this proposition that his testimony (R. 897) as to the effect of relative traffic density in Arkansas upon the cost per unit of traffic in that State, is of no value, or, at best, necessarily rests upon sheer conjecture.

The freight traffic density was 20 per cent less and the passenger traffic density 30 per cent less in Arkansas than on the entire railroad in 1913 (see appellants' brief, page 65). If the total freight traffic of the entire railroad were reduced

20 per cent and the total passenger traffic of the entire railroad reduced 30 per cent, the traffic density, freight and passenger, on basis of an average per mile for the entire railroad, would have been exactly similar to the traffic density in Arkansas. It can be mathematically demonstrated that if we reduce the traffic density of the entire railroad to the Arkansas level, and then apply to the traffic of the whole railroad, the Arkansas unit costs developed by the appellees in their exhibits, the resultant figures would come within a hair's breadth of the actual operating cost of the entire railroad. This proves conclusively that, considering the actual conditions of traffic density in Arkansas, the Arkansas unit costs developed by the appellees are sound and accurate. In order to make this proof, it is only necessary to take the appellants' own exhibits, designed to prove that the appellees' Arkansas costs were unsound, and place the entire railroad figures therein, reflecting the volume of traffic, on a parity with the traffic density figures of Arkansas in the same period.

For purposes of this demonstration, we have taken appellants' Exhibit B and the calculations for the year 1913 set forth therein.

If the total traffic—tons, passengers, tons one mile and passengers one mile—of the entire railroad be reduced 20 per cent and 30 per cent, freight and passenger, respectively, the traffic density per mile of railroad is automatically reduced 20 per cent and 30 per cent, respectively, for freight and passenger traffic.

The calculations, based upon appellants' Exhibit B, for the year 1913 reflected therein, are as follows:

The traffic of the entire line for that year is shown in that exhibit to have been as follows:

Number of tons	18,084,016
Number of tons moved one mile	3,005,714,964
Number of passengers	10,505,911
Number of passengers carried one mile	461,608,235

Reducing this entire line volume of traffic to the Arkansas level—that is to say, the freight units 20 per cent, and the passenger units 30 per cent—the traffic units of the entire line for the year 1913 would have been:

Number of tons	14,467,212
Number of tons moved one mile	2,404,571,971
Number of passengers	7,354,137
Number of passengers carried one mile	323,125,764

Applying to this volume of traffic, the appellees' Arkansas unit costs, set forth in appellants' Exhibit B, we have the following calculations:

14,467,212 tons	×72.972 cents=	$10,557,013.94
2,404,571,971 ton miles	× .465 cents=	11,181,259.67
7,354,137 passengers	×17.354 cents=	1,276,236.93
323,125,764 passenger miles	× 1.242 cents=	4,013,221.99
		$27,027,732.53
Add appellants' mail and express costs, as shown in Exhibit B		1,820,778.21
Total		$28,848,510.74

If traffic density of the entire line had been exactly on a par with that of Arkansas, appellants' Exhibit B for the year

1913, would have shown that the cost of operation of the entire railroad on basis of the unit costs developed by the appellees in Arkansas would have been $28,848,510.74, arrived at as set forth in the table immediately preceding.

The appellants' Exhibit B shows that the actual expenses of the entire line for the year 1913 were $28,185,421.16—the difference between which figure and the constructive figure produced on basis of the Arkansas unit costs with the entire line traffic density reduced to the Arkansas level, it will be noted, is approximately 2 per cent.

It is apparent from this that the appellants' Exhibits B, C, D, and E (and they are all of a similar character to Exhibit B, some including lines in Texas and some excluding such lines), when based upon an entire line traffic density properly comparable with that of Arkansas, absolutely confirm and substantiate the very thing they set out to disprove—that is, the accuracy of the appellees' costs per unit of traffic for line and terminal service, freight and passenger respectively, in the State of Arkansas in the year 1913.

In appellees' Exhibit 41, it is shown that the proportion which the total traffic in Arkansas was of the traffic of the entire line, was practically level, varying less than one per cent in the years 1910, 1911, 1912 and 1913. Inasmuch as the miles of railroad operated had not changed throughout those years, either in Arkansas, or of the railroad as a whole, an unchanged relation in the total volume of traffic means necessarily an unchanged relation of traffic density per mile of railroad; so that, while the total volume of all traffic, both in Arkansas and upon the railroad as a whole, may have fluctuated, the relation of

density of traffic in that State to that of the entire railroad had not changed throughout all the years mentioned. It will, therefore, suffice to say that the demonstration, made in this connection with the 1913 figures, is applicable to all of the other figures set forth in appellants' Exhibits B, C, D and E.

Mr. Hamilton was asked by counsel if the terminal cost had any relation to the length of haul. He explained the relation and its effect upon terminal cost very clearly at pages 866 and 867 of the record by comparing the haul of 160 miles, the average length of haul on the entire line, with a haul of seventy miles, the average length in Arkansas. Only two terminal services are required in moving a ton of freight 160 miles, or the average haul for the entire line, while four terminal services would be required in moving one ton 140 miles in Arkansas where the average haul is but seventy miles.

This is illustrated by the witness in answer to questions put to him by counsel. In that connection he said:

"The fact that you handled a ton four times instead of twice may or may not have caused more terminal expense, but when you have set up the actual terminal expense or accumulated it on the basis of the time study or the direct allocation, then each ton that moved into or out of the terminal will bear is burden. There will be a greater expense, and properly so, accruing against a given number of tons of short haul traffic as compared to the same number of tons of long haul traffic. The Arkansas business is a short haul business."

We specially call attention of the court to the testimony of Mr. Hamilton at pages 825-834, 865-869, 880, 885-886, in which he shows conclusively and beyond question that unit cost is affected by density of traffic and by the length of the haul, and explains in considerable detail the causes that

create the differences. (The appellants made no effort to contradict Mr. Hamilton's illustrations and statements). They rest wholly upon a statement contained in Exhibit 4, where, in describing the use of constructive mileage, it was assumed that the average terminal costs in the State per ton and per passenger handled was closely reflective of similar costs on the railroad in other states, and to a partial extract from the testimony of Mr. Hamilton at page 260 of the record in which he stated that he made some examination and found that the cost per ton of handling freight in the two big stations of the railroad in the city of St. Louis had run between 36 and 39 cents per ton, and found that pretty close to the Arkansas average. He then stated that the exhibits in this case embrace all freight, including carload and less than carload, and that it cost much more to handle less than carload than carload freight. That fact explains the expense of handling freight at the two big stations at St. Louis, where all the freight handled is less than carload.

Mr. Hamilton was the first witness introduced in this case and these statements were made before the point developed by Mr. Simson's exhibit was brought out. He did not have in mind in this testimony, nor in the preparation of the exhibit, the question of terminal cost per unit, or comparison of the unit cost between traffic in the State and on the entire line; but we do not regard that as material. It would not matter if Mr. Hamilton and every other witness called in the case had testified that in his opinion the unit cost was level and uniform as between the State and the entire line of railroad. The facts developed in the record as to the class of expense included in terminal cost, the manner in which it is

ascertained, wholly without any reference to the tons or passengers handled, which establishes beyond the shadow of a doubt that a very considerable part of that cost is unaffected by variations in the number of tons or passengers handled in terminals and at stations, rendered it absolutely impossible that the cost per unit should be uniform, unless by accident, even between stations in the same State, where the number of tons and passengers handled varied; and much less can this be so as between traffic in a State where there is a light density of traffic and a short haul, and an entire system of railroad operating in six other States where the density of traffic is from 20 to 30 per cent higher, and the average length of haul more than double that in Arkansas. This proposition is self-evident and beyond question, and the fact that the exhibit in this case assumed, and that Mr. Hamilton assumed, but not in either case in connection with the question we are now considering or with that question in mind, that the Arkansas terminal cost would be fairly reflective of that of the system, can not change the effect of these facts any more than his statement that twice two produced five could be taken to establish that fact; and this disposes of this whole attack upon the Formula, made with such confidence and with so little appreciation of the actual conditions of traffic, by the appellants' witness and the learned counsel.

APPELLANTS' EXHIBITS H-1, I-1, J-1, K-1, L-1, M-1, N-1, O-1, P-1, AND Z-1.

These exhibits were substituted for exhibits designated as H, I, J, K, L, M, N, O, P and Z, filed by the appellants and in which there were discovered by the appellees' accountants,

errors of very large magnitude. These exhibits refer solely to the earnings and expenses of the railroad in Arkansas for the four months ended December 31, 1907, and treat of such earnings and expenses in the aggregate for all classes of business combined, intrastate, interstate, freight, passenger and mail and express, as such aggregate earnings and expenses were figured by the appellants' accountants.

As will be explained later, the final figure produced in these exhibits and the percentage of return shown, based thereon, were not the result of any actual allocation of expenses, but rested upon a system of averages, and average percentages. In this connection, attention is called to the testimony of Mr. Hamilton at pages 840 to 848 inclusive, of the printed record. In summing up his explanation of these exhibits, Mr. Hamilton said on pages 847 and 848:

"I realize that perhaps the explanation which has been made of the exhibits of the State sound rather involved. But the process that has been employed in their preparation is such a mass of averages, average percentages, mathematical averages, five years average and six years averages, that it is pretty hard to give other than an involved explanation of them.

Now, as to the contrast you spoke about, Mr. Moore: Contrasted with the scheme which I have described, as employed by the State, is the simple and direct method the company has employed in its exhibits, which starts first with a real attempt at direct cost accounting, and an effort to charge the various classes of business, all traffic, with the expenses, upon the basis of the use of the property which incurred those expenses."

We desire to reiterate here the statement that in all of these exhibits offered by the appellants, no effort is made to make any separate showing in regard to either freight or pas-

senger business or intrastate or interstate. With all the labor expended on the exhibits presented by the appellants, through Mr. Simson, the court will not find any instance where the earnings and expenses are separated between freight and passenger, or between intrastate and interstate. The total results of operation show no such division between the various classes of traffic.

Such exhibits, and such results, shed no light upon the investigation in regard to the sufficiency of intrastate rates, freight and passenger.

Upon what theory the appellants were willing to rest their case on the basis of results of the total business of the railroad within the State, is not known. Whether it was because they thought that a determination of this matter would depend upon the results of the total business, or whether they feared to put their methods to a test by applying them to the intrastate traffic as separated from the interstate traffic.

As was pointed out by Mr. Hamilton in his testimony on pages 840 to 848, the appellants made serious errors in their Exhibits H, I, J, K, L, M, N, O, P and Z, having included, as a basis for an averaging process, the earnings of 4,750 miles of railroad and the expense of 5,250 miles of railroad in some instances and the expenses of 5,428 miles of railroad in other instances. This whole proposition of these errors is summed up on page 751 of the printed record, where the testimony of Mr. Simson reads as follows:

"Q. Just to get the matter clearly in the record, I want to sum up this whole proposition and I will ask you if it is not a fact that these numerous errors in your figures, which we have been discussing, run through every one of your Ex-

hibits H, I, J, K, L, M, N, O, P and Z; and if each and every one of these exhibits is not incorrect to the extent that they have set up in them the earnings of the lines north of the Red River, which is the railroad involved in this litigation, and have, on the other hand, in making your computations as to expenses included the expenses in all the periods of from two to five other railroads which are not parties to this litigation or interested in any way therein. Isn't that true?

A. Yes, that is true."

These errors made it necessary for Mr. Simson to prepare other exhibits, and these substitute, or corrected exhibits, were offered as Exhibits H-1, I-1, J-1, K-1, L-1, M-1, N-1, O-1, P-1 and Z-1. The magnitude of the errors made in these exhibits by the State's accountants, is brought out in the testimony of Mr. Hamilton in rebuttal on pages 842 to 844, inclusive, in which it is shown that *so elastic was the process of averaging, used by the State* in arriving at the results shown in its exhibits just referred to, *that errors of from nine to twelve million dollars in the basic figures of earnings and expenses upon which their averages rest, made only infinitesimal differences in the final results obtained*, as between the exhibits containing the erroneous basic figures and those in which such errors had been corrected.

In the opinion of the District Court, page 930 of the printed record, appears the following summing up by the court concerning its findings as to these Exhibits H-1, I-1, J-1, K-1, L-1, M-1, N-1, O-1, P-1 and Z-1:

"In these exhibits, as in all others of Mr. Simson's, no allowance is made, as stated before, for differences in cost, taxes, density of traffic, shorter hauls shown to exist in Arkansas when compared with the entire system, nor any difference in cost between state and interstate, but the road in Arkansas is treated as a part of the entire system, and the assumption acted on that the cost is the same on every part of the system, and also for intra and interstate business, an assumption wholly unwarranted and opposed to all the evidence in the case.

Nor does he make any allowance for decreased earnings, which would have resulted from the State's rates, sought to be enjoined by this action.''

The purpose of the appellants in preparing these exhibits was stated to be to show an average condition for a series of years upon a variety of bases. The figures produced by them in the exhibits purported to show the earnings and expenses of all of the traffic of the railroad of every character within the State of Arkansas—freight and passenger, state and interstate combined—for the four months ending December 31, 1907, and for no other period; and these four months' earnings and expense figures were produced by averaging the entire earnings and expenses of the railroad over a period of five years in some instances and six years in other instances.

EXHIBIT No. 61.

The district judge at the hearing of this cause in the court below, requested Mr. Hamilton, the accountant for the Railroad Company, to prepare for him an exhibit showing one year, which was to be an average of the four years—1910, 1911, 1912 and 1913, reflected in the railroad's Exhibits 22, 24, 25 and 26. This exhibit to show, for an average year of the four years, the earnings, expenses and net return upon the value of the property from the intrastate freight and passenger business in the State of Arkansas, separately. Such an exhibit was prepared and filed as Exhibit No. 61. The situation as to the intrastate freight and passenger earnings and expenses for an average year, of the four years ending June 30, 1913, as shown in this Exhibit No. 61, is referred to in the opinion of the court below at pages 926 and 927 of the printed record. The figures, of earnings and expenses for the intrastate business, freight and passenger respectively, quoted on page 926 of the record are drawn directly from this Exhibit

No. 61 in which it will be seen, by reference to these figures in the court's opinion, that the court has added back to the average revenues for one year, one-fourth of the diminution in revenue which would have been suffered by the railroad had the inhibited rates been in effect; and, further, that the court's caption of "operating expenses" on page 926 of the record includes, in addition to the operating expenses for an average year of the four shown on the first page of Exhibit No. 61, the taxes, rentals and hire of equipment as well.

We call attention to the fact that the figures, on page 1 of Exhibit No. 61, relating to the intrastate freight and passenger business for an average year of the four, show that, on the basis of the inhibited rates, the gross revenue from the intrastate freight business was insufficient by the sum of $12,785.18, and the gross revenue from the intrastate passenger business was insufficient by the sum of $17,877.63, to pay operating expenses, taxes, rentals, and hire of equipment, and that there was no return at all, but an actual deficit from the conduct of these two classes of traffic in the revenues on the basis of the inhibited rates.

APPELLANTS' EXHIBITS Q, R, S, T, U AND V.

Exhibits Q, R, S, T, U and V, all related to the appellants' contentions concerning the assignment of freight revenues to the State of Arkansas, as distinguished from the balance of the railroad, for the four months ended December 31, 1907. These contentions, and the figures in the exhibits referred to, make no distinction between intrastate and interstate freight revenue; but, like the preceding exhibits, treat of the assignment to Arkansas of all freight revenues, intrastate and inter-

state, combined. The appellants claimed, in introducing these exhibits, that the Railroad's General Auditor, in assigning to Arkansas Freight Revenue, intrastate and interstate, combined, had employed bases which were erroneous in certain minor particulars. In current railroad accounting practice, it is necessary from time to time to make certain adjustments or revisions of the freight revenue figures originally credited on the books of the carriers—claims for overcharges in rates, claims for absorption of switching charges, adjustments of rates on through cotton movements, and similar matters are presented after the original entries of revenues have been made on the carriers' books.

On Exhibit Q it is shown that in the four months ended December 31, 1907, the total freight earnings of the St. Louis & San Francisco Railroad on its entire line were $9,283,962.98, and that the adjustment against this amount of revenue for the entire line of the St. Louis & San Francisco Railroad in all states on account of overcharges, switching claims, cotton claims, etc., amounted in the same four months to a deduction from such gross freight revenue as originally entered on the company's books, in the sum of $501,661.84.

There is also shown upon Exhibit Q an adjustment made by the auditor of the railroad against the freight revenue originally credited on the books for these four months for the entire line, amounting to $393,608.01, which is shown to be "adjustments of charges and prepay-connecting lines." This item of $393,608.01 includes also the amount of $255,024.84, shown as the last figure in the left hand column of Exhibit Q as "Net Decrease of Freight in Transit." These matters are explained by Mr. Simson, one of the accountants for the appellants, on

pages 619 and 620 of the printed record. In the first instance, the appellants raised no objection to the character of these adjustments (with the exception of the item of "Freight in Transit," which will be discussed later) of the revenue of the entire line. Their objection went to the apportionment of these adjustments to the State of Arkansas. They claimed that the auditor of the railroad had erred in making his assignment of these adjustments to the State of Arkansas upon the basis of the relationship of the mileage of the railroad in that State to the mileage of the entire railroad, and that the apportionment of these adjustments should have been made on the relationship of the gross revenue earned in the State of Arkansas on freight traffic to the gross freight revenues of the entire railroad. This is conceded by the appellees.

It is the practice, sanctioned by official rate regulating bodies, to allow grain to be milled and cotton to be compressed in transit, charging the local rate into the mill or compress on the raw grain or uncompressed cotton and, subsequently, when the milled or compressed product goes forward from the milling or compressing point, to make certain adjustments of through rates so as to refund a part of the local rate into the mill or compress.

In Exhibit R the appellants treat of such adjustments, made upon the entire grain and cotton milling in transit movement of the entire St. Louis & San Francisco Railroad for the four months ended December 31, 1907, and here again the difference between the State's accountants and the Railroad's Auditor is that the auditor made an assignment of these adjustments to Arkansas on the basis of road mileage as previously explained in connection with Exhibit Q, while the

appellants contend, and we concede, that this adjustment should have been apportioned to Arkansas in the relationship of the gross revenues on these milled or compressed commodities in that State to similar revenues of the entire railroad.

On Exhibit S, the figure of $393,608.01, appearing in Exhibit Q is repeated, and the exhibit simply treats of the assignment of this amount of adjustment of freight revenue as between the State of Arkansas and the balance of the railroad —the Railroad's Auditor having applied a road mileage prorate and the State contending (properly, as the appellees admit) that such an assignment should have been made upon the basis of the related gross revenue as explained in connection with Exhibit Q.

Exhibit T is simply explanatory of Exhibit U, which follows it. It shows the amount of freight earnings in transit in total for the entire St. Louis & San Francisco Railroad at the end of each month for a period of nine years, included in which are the four months ended December 31, 1907, of which the State's accountants treat in its Exhibit "U."

For the information of the court, it may be well to state here in condensed form (as is disclosed in detail by the record in the case) what is meant by "Freight Revenue in Transit."

In addition to taking up on its books, as freight revenue earned, the charges upon shipments which have arrived at their destinations and been accounted for by agents, or connecting carriers, the St. Louis & San Francisco Railroad, each month, also credits its freight revenue account with an estimate of earnings upon freight which is "in transit" and has

not yet been reported as having been received at destination. These estimates credited to freight earnings in the current month's account are adjusted to the actual figures or amount of freight revenue earned on these particular shipments in subsequent months, after such shipments arrive at destination and actual earnings thereon are ascertained. This method of handling is in vogue on a great many railroads and has been for many years.

In Exhibit "U" the appellants' accountants call attention to the fact that in adjusting these freight in transit estimates for the entire St. Louis & San Francisco Railroad, freight revenues for *the entire line* in the month of September, 1907, received an added credit of $197,518.07, whereas, in the month of December, 1907, the adjustment of the freight revenue in transit resulted in a deduction from the freight revenue account of *the entire line* of $452,542.91. The State's accountants claim that this was an abnormal situation, and have, in Exhibit U, reinstated in the freight revenues of the entire line, $255,024.84, the net difference between the in transit credit to September, 1907, freight earnings and the deduction from the December, 1907, freight earnings.

This reinstatement of $255,024.84, they have prorated as between the State of Arkansas and the balance of the railroad on, basis of the gross revenues for these four months before this adjustment was made. The net effect of this was, as shown in Exhibit U, to add to the freight revenues of every kind in the State of Arkansas for the four months ending December 31, 1907, $27,316.22.

In Exhibit V, there is shown first the freight revenues assigned to Arkansas by the auditor of the railroad in his re-

port to the State Railroad Commission for the four months ended December 31, 1907, amounting to $852,610.53, which is the amount appearing in the Railroad's Exhibit No. 27-A as the gross revenue from freight traffic in Arkansas, intrastate and interstate combined, for these four months before the equating process was applied thereto.

To this amount of $852,610.53, the State's accountants in Exhibit V, have added what they determined was the Arkansas proportion of the adjustment set forth in Exhibits R, S and U. The net effect of this is to increase the total freight revenues in Arkansas set up by the Railroad's Auditor as $852,610.53 to the figure which the State's accountants claim is correct, namely: $893,121.69. The appellees' contention concerning Exhibits R, S, T, U and V is, that *none of the adjustments of freight revenue in the State of Arkansas suggested therein by the State's accountants have any relation whatever to, or any effect upon, the intrastate freight or passenger revenues of the company in the State in any of the periods covered by the exhibits in this case.* Analysis and comment in detail on these exhibits is given in the testimony of Mr. Hamilton on pages 834 to 839 inclusive in the printed record.

APPELLANTS' EXHIBITS "W" AND "X."

In Exhibits "W" and "X" appellants objected to the bases used by the auditor of the railroad in assigning operating expenses to the State of Arkansas, as a whole, for purposes of the original affidavit filed in the case. These figures cover only the four months ended December 31, 1907.

The fact that the auditor of the railroad had a formula for the purpose of assigning expenses as between the various

States through which the railroad operates, and that in assigning, in the month of September, 1907, a portion of the expenses of the entire railroad to the State of Arkansas, he departed from this formula in some minor matters in the compilations affecting that one month's expenses, is discussed at length in the record. A correction of these departures is set forth in Exhibits "W" and "X," the first of which treats of maintenance of equipment expenses, and the second, of sundry transportation expenses. The whole amount of the changes indicated by these exhibits as affecting the expenses assigned to the State of Arkansas, aggregated for all classes of traffic conducted therein—intrastate, interstate, freight, passenger and mail and express is too small to have any effect or material bearing on the case. Further, so far as the appellees' exhibits are concerned, these departures in method by the railroad's auditor in September, 1907, were corrected, as is shown in the testimony of Mr. Hamilton, before the auditor's expense figures for these four months of 1907 were equated to the basis of the new formula, filed as Exhibit No. 1, in the manner previously explained. It may be well to call the attention of the court here to the statement made by Mr. Hamilton at several places in the record concerning the soundness of this equating process to the effect that these departures in method in the month of September, 1907, had been corrected, and that the figures prepared by the auditor of the railroad upon which the equation referred to rests, had been placed upon a uniform basis throughout all the periods covered by the exhibits in this case before such equation was made.

This is shown by the following testimony of Mr. Hamilton:

"In these Exhibits "W" and "X," the State has worked out in detail changes in Mr. Douglas' assignment under his old formula for the months of October, November and December, 1907, so as to make the figures for those three months agree with the departure which Mr. Douglas made in the application of his formula in the month of September, 1907.

The State's accountants have also, in these exhibits, substituted, to some extent, their judgment of what Mr. Douglas ought to have had in his formula for what he really had in his formula.

I think I have said heretofore in the record, and been somewhat criticised for it, that it did not make any difference whether Mr. Douglas divided his expenses by locomotive miles or car miles, or potatoes, or apples—so far as our purpose was concerned, as long as he stuck to his unit, his basis.

After we reworked our Exhibit 27-A to put the one month on a parity with the four years and three months, instead of re-working the four years and three months to put them on a parity with the one month, we had, after that was done in Exhibit 27-A, Mr. Douglas on a uniform basis upon the principle of his formula.

I have said that Mr. Douglas' basis of his formula, when this correction for September is made, becomes uniform and consistent down to June 30, 1913, where our concern with it stops, so far as this issue is concerned." (R. 850, 851.) See Mr. Nay's evidence *supra*. (R. 345-346.)

Mr. Simson also, at page 716 of the record, admits that Exhibit 27-A, by the application of the old or Douglas formula in September, 1907, was put on the same basis as the months that follow.

EXHIBIT "Y."

This exhibit offered by the appellants purports to be a statement of income and return upon the value of the property in Arkansas for the four months ended December 31,

1907. It makes no segregation of the earnings and expenses which it assigns to the State of Arkansas, as between intrastate, interstate, freight, passenger, mail and express traffic, and it therefore is of no value in determining the matter at issue—whether or not the intrastate freight and passenger rates are confiscatory.

It is a composite of the appellees' Exhibit 27-A and the appellants' Exhibits "V," "W" and "X." All of the figures reflecting earnings in this exhibit are drawn from appellees' Exhibit 27-A, with the exception of the freight earnings which are those arrived at in the appellants' Exhibit "V" after making the adjustments of the assignment to Arkansas of various deductions from, and additions to, gross revenues which have been explained in connection with Exhibit "V," which adjustments had no effect whatever, or, at least, only an infinitesimal effect, upon the intrastate revenues in Arkansas. The operating expense figures appearing in Exhibit "Y" are drawn from Exhibit 27-A, with the exception of maintenance of equipment expenses and transportation expenses, which figures are taken from appellant's Exhibits "W" and "X." As has been explained, the figures in Exhibits "W" and "X" are the result of an adjustment of an error of the auditor of the railroad in applying his old formula in the month of September, 1907, so that in their Exhibit "Y," the appellants adopt the auditor's old formula for the assignment to Arkansas of maintenance of equipment and transportation expenses, but reject that formula in so far as maintenance of way and structures, traffic and general expenses are concerned, and base these expenses upon the result of the equation of the auditor's results under the old formula to the basis of the new

formula filed as Exhibit No. 1. Here we have a hybrid proposition which does not rest firmly upon any one basis, but is a composite of two bases, to neither of which the appellants' witnesses adhered, as was developed when Mr. Simson, at page 641 of the record, stated that, considering all of the exhibits offered by the appellants, Exhibit "O" (afterward changed to "O-1"), reflected the facts which they desired to stand upon in this case.

Explanation has previously been made of Exhibits "Q," "R," "S," "T" and "U," all of which are crystallized in Exhibit "V" and Exhibits "W" and "X" have also been explained. Now, Exhibit "Y" is the concrete presentation of the effect of all of these Exhibits, "Q," "R," "S," "T," "U," "V," "W" and "X," and brings all of the calculations and data set forth in them down to a final showing of return upon all of the business of the railroad within the State of Arkansas—*intrastate, interstate, freight, passenger and mail and express all consolidated*—as determined by the appellants' accountants for these four months. So, when Mr. Simson, the principal accounting witness for appellants, who prepared and introduced these exhibits, testified that they stood on Exhibit "O," he discarded the remaining exhibits—"Q" to "Y," inclusive—and we submit that they should be disregarded and dismissed from consideration by the court.

APPELLANTS' EXHIBITS "AA" AND "BB."

As explained by Mr. Simson on pages 628 and 629 of the printed record, Exhibit "AA" is made up simply by copying the total expenses, earnings, taxes, etc., in Arkansas, from the appellees' Exhibits 20-A, 22 and 23, which earnings, expenses,

etc., are those of the year ended June 30, 1913, and which, as we have shown, were actually assigned and allocated to the State of Arkansas by the appellees on basis of their formula, Exhibit No. 1, but which exhibits were subdivided by the appellees, also, in accordance with the formula as between the intrastate and interstate, freight and passenger and mail and express business. On the pages of the record referred to, there is a reference to an adjustment of a rental item, known as the "Kansas City, Fort Scott & Memphis Railroad—Guaranteed Dividend." This is the item that was eliminated at the suggestion of the court, and the result of such elimination shown in the appellees' Exhibit No. 28 *supra*, pp. 55-56. So therefore, appellants' Exhibit "AA" is wholly based upon and quotes verbatim figures as to earnings, expenses and other charges which were produced by the appellees, as one step in the process of determining results of the intrastate freight and passenger business in Arkansas, but the appellants, in filing this exhibit, do not show to the court any such separate results, *contenting themselves with showing the return upon the entire business in Arkansas of every class and character combined,* including both intrastate and interstate.

Exhibit "BB" is similar in nature to Exhibit "AA," but the earnings and expense figures included therein are those assigned to the State of Arkansas under the railroad's old formula and which were used by the railroad simply as a background of comparison to obtain percentage relationships between the old formula and the new, to be used in equating the figures obtained in years prior to 1913 under the old formula to the basis of the new formula. Here again *the appellants have simply shown a figure of return upon the entire business*

of the railroad in Arkansas on the basis of the company's old formula. They have included in Exhibit "BB" an adjustment of the expenses of the Memphis terminal which is fully described in Exhibit "G," and by reason thereof added to the expenses in Arkansas, for every character of business combined as determined under the company's old formula, the sum of $72,107.48. It will be observed that no such adjustment was made in connection with Exhibit "AA," which quotes the expenses assigned to Arkansas under the railroad's new formula (Exhibit No. 1), and that there is no controversy as to the actual assignment of expenses to Arkansas under the new formula. Mr. Simpson explains Exhibit "BB" on pages 629 and 630 of the printed record.

Just what aid or information to the court these Exhibits "AA" and "BB" could possibly be is not apparent when we consider that the problem to be dealt with is the return upon intrastate freight and passenger business only. These exhibits deal with the return upon the entire business of every character, intrastate, interstate, freight, passenger and mail and express combined, within the State.

Before passing from the discussion of these exhibits, it will be well to call attention to the fact, as shown by testimony of Mr. Hamilton on page 852 of the printed record, that during the year ended June 30, 1913, which is the period covered by these two exhibits, the railroad was charging an intrastate passenger fare of three cents per mile and rates on basis of what has been known as the "Court Tariff" for freight transportation, in Arkansas. The rates sought to be enjoined were a two-cent passenger fare and a basis of freight rates much lower than the "Court Tariff;" so that, appellants' Exhibits

"AA" and "BB," even as to the total traffic of every character within the State, overstate the net income and percentage of return upon the value of the property which would have been earned had the railroad been charging the two-cent intrastate passenger fare and the freight rates prescribed by the Arkansas Railroad Commission which were sought to be enjoined.

The whole situation as to these Exhibits "AA" and "BB" is tersely stated by the witness Hamilton on pages 851, 852 and 853 of the printed record.

APPELLANT'S COMMENTS ON THE COURT'S FINDINGS.

At the conclusion of their brief the counsel point out errors which they contend the court made in its findings based on the evidence.

They first call attention to the statement by the court on page 916 of the record that the average value of the property for the four years 1910 to 1913, inclusive, under the stipulation was $17,924,441.75, and that the gross earnings in the State for the four years was $16,688,486.86. These figures were taken by the court from the first sheet of Exhibit 61, which is a compilation made from exhibits filed by appellees, numbered 22, 24, 25 and 26, and based on the stipulation as to value which appears on pages 906-907 of the record, and it is a correct statement of the average stipulated value for the four years. The statement by the court as to the gross earnings is not based on any stipulation, but is the result of averaging the actual earnings shown in exhibits 22, 24, 25

and 26, which shows the earnings of each one of those years and is undisputed.

The statement by the court that it was shown by the undisputed evidence that the four years referred to were normal is absolutely correct, and there is not a scintilla of evidence in the record to the contrary. The further statement and finding on the same page that the months of November and December, 1913, were normal is based on the evidence introduced and on Exhibits 34-41, which have been discussed by us in connection with that subject, and the finding is clearly sustained by the evidence.

Counsel say that the court has not understood Mr. Mayer's evidence. We have already called attention at some length to the evidence of that witness, and are unable to find any particular in which the summing up by the court indicates a misunderstanding of the positions taken by him and his evidence in support of his views. A careful reading of Mr. Mayer's evidence, and particularly his statements on cross examination, will justify the views expressed by the court in regard to it.

It is stated that the court misapprehended the correction of the terminal costs and line costs as made by the State. A reading of he opinion on pages 925 and 926 shows that the court did not misapprehend the bearing of the testimony in either of the aspects pointed out by counsel. This question has been discussed at some length in this brief and we think the finding of the court as to the effect of the correction is not only sustained by the statements of Mr. Simson himself, which are quoted in the opinion, but by all of the evidence introduced on both sides. On page 927-928 of the opinion, the court says that the result would not differ materially if

the figures of the State's acountants were accepted and applied to the intrastate business, although they are made on the basis of net earnings of the entire system. In commenting on this statement counsel say that the court overlooked the fact that the calculations made on the net intrastate earnings were based on the extra costs of intrastate freight and passenger business developed by the test made in 1913. In other words, the position of counsel is that the court erred in its findings. We would only add to what has heretofore been said in the discussion of the test that if there is any one fact which is completely demonstrated from the practical operations of the road in handling and transporting freight and passengers it is this fact. The result may not be agreeable to counsel, but it represents actual conditions ascertained and developed from day to day. There can be no question, and we submit that it constitutes the very highest degree of evidence that could be produced upon the question as to the comparative cost of conducting the two classes of business.

Counsel, in referring to a statement at page 930 of the opinion in connection with Exhibit "O," that the Douglas Formula was discarded because found to be erroneous, say on page 92 of their brief:

"Mr. Hamilton admitted many of these errors and criticised not the Douglas Formula but the Company's Formula for dividing passenger and freight which was used for comparative purposes.

Mr. Hamilton's criticism may also have run to the Formula for assigning to States, but the evidence is not so understood. The point, however, of this reference is merely to show that the court misapprehended the force of the various exhibits based on the old Formula contrasted with the new formula as he evidently believed, as shown by this quota-

tion, that the old Formula was discarded by everyone, and no value could be attached to it, whereas Mr. Hamilton repeatedly stated that there was little difference between it and the new Formula, and evidently his criticisms which the court had in mind were of the Formula used by Mr. Douglas and the railroad for separating passenger and freight, which was only used for their operating comparisons as stated in Exhibit No. 23."

A perusal of the record will show that the court's opinion, criticised by counsel in the language quoted, is based upon a sound understanding of the facts as disclosed by the record. In order to clear up this entire matter, which seems to have been thoroughly misunderstood by counsel, it will be well to state just what this whole matter relates to.

Prior to the divising of the Formula filed by the appellees as Exhibit No. 1, the railroad, for purposes of its own operating comparisons, and of making approximate reports to State Railroad Commissions, had a rough hewn Formula for assigning expenses to States, and between freight and passenger services. This has been referred both to as the "Douglas Formula" and the "Old Formula." Counsel now, on page 92 of their brief, adds a new designation, "The Company's Formula." These three Formulas are one and the same and they have no relation to, or connection with the Formula filed as Exhibit No. 1, and the use made by the appellees of the figures compiled under the "Douglas Formula," the "Old Formula," or, as counsel now term it "The Company's Formula" was, as has been explained carefully in connection with Exhibit No. 23, only as a back ground of comparison, or equation, in carrying the concrete result of the new Formula, filed as Exhibit No. 1, as it was applied in detail in 1913, back to prior periods. In using the results

of applying the Old, or Douglas Formula, for purposes of equation, the railroad's accountants discovered that in one month, 1907, Mr. Douglas—the auditor of the railroad, *who had no connection with the preparation of the data under the new Formula,* (filed as Exhibit 1)—had, through error, departed from the text in applying the Formula known as the Douglas or Old Formula. In order that the equating process might be sound, these errors were corrected and Mr. Douglas, application of his old Formula placed upon a uniform basis throughout all of the periods. This is explained in testimony of Mr. Hamilton which has been quoted elsewhere.

In the quotation from counsel's brief, statement is made, that "Mr. Hamilton repeatedly stated that there was little difference between it (the Old or Douglas Formula) and the new Formula (Exhibit No. 1) and that it appears his criticisms which the court had in mind were of another Formula used by the railroad for separating passenger and freight." Counsel has patently misunderstood this entire proposition. What he speaks of as two Formulae, one for assigning expenses to states and one for separating expenses between freight and passenger, were both embraced in the process known as the "Douglas Formula," the "Old Formula," and now, as counsel designates it for the first time, the "Company's Formula." That Mr. Hamilton did discard the Old or Douglas Formula, except as a back ground or basis for the equation of expenses of prior years to the basis of the new Formula, Exhibit No. 1, is a fact, as is disclosed by the testimony, and, therefore, counsel's whole criticism of the court in this connection is unfounded. We have deemed it necessary to make

this rather lengthy explanation as the statement contained in the appellants' brief is calculated to muddy the waters and be misleading.

At page 93 of counsel's brief, reference is made to the court's findings concerning an alleged error of $23,000 in the Memphis Terminal expense, assigned to Arkansas, as set forth in appellants' Exhibit "G." Counsel neglects to state, as a reference of the record will disclose, that the effect of this correction was to add the amount stated to Arkansas expenses without any accompanying addition to the revenues assigned to Arkansas. Upon testing this matter out, it was found that the effect of correcting this difference of $23,000 would be insignificant, just as the court is criticised on page 93 of counsel's brief, for stating it would be, and, therefore, although this correction if made would have inured to the benefit of the appellees' contentions, it was not made on account of its insignificance in effect upon the ultimate result.

On this same page of the brief, counsel refers to appellants' Exhibits "V," "W" and "X," and makes the statement that "they show errors" to such an extent that the return in the four months of 1907 would be increased to 6.53 per cent.

The court's attention is directed to the discussion of these particular exhibits at pages 153-160, *supra*, and to the quotations from the record in connection therewith, in which it is shown that the matters covered by these exhibits were not errors, but differences of opinion between the State's accountants and the railroad's auditor, as to how certain ad-

justments of revenue should be made and certain divisions of operating expenses applied.

Exhibit "V" deals solely with revenues for the four months of 1907. In the testimony of Mr. Hamilton (R. 836-840) which is uncontradicted, it is shown that the adjustments of revenue set forth in Exhibit "V" have relation only to the interstate traffic and do not in any way affect the intrastate traffic.

Exhibits "W" and "X" deal entirely with the apportionment of operating expenses to the State of Arkansas, in the four months of 1907, under the Old or Douglas Formula. That all of these matters have been corrected and those corrections reflected in the appellees' Exhibit 27-A is admitted by Mr. Simson at page 716 of the record.

It is apparent, therefore, that after the appellees had filed their Exhibit 27-A, none of these Exhibits, V, W, and X, or Exhibit Y, in which they are summarized, had any bearing whatever upon the earnings, expenses, or net return upon the intrastate business either freight or passenger in Arkansas, further confirmation of this is found in the uncontradicted testimony of Mr. Hamilton, which is referred to or quoted (*supra*, 158, 160) in connection with the discussion of appellants' Exhibits Q, R, S, T, U, V, W and X. *The percentages of return quoted by counsel in this connection, apply to the entire business in the State of Arkansas, freight, passenger, intrastate, interstate and mail and express combined.*

These alleged errors on the part of the court are embodied in pages 90 to 93 of appellants' brief. They are either

misleading or trivial. None of them rest on any solid foundation, and we respectfully submit that the findings of the court in the particulars referred to and in the result arrived at are sustained by the evidence.

SOME MATERIAL ERRORS IN APPELLANT'S BRIEF.

At page 47 of their brief, counsel say that the court's statement of the reasons for the extra cost of intrastate over interstate traffic is almost identical with the testimony reviewed by Mr. Justice Hughes in the Minnesota Rate Case (230 U. S. 352, 462-464).

The testimony in the Minnesota Rate Case, referred to, rested solely upon the expert opinion of railroad operating men. In this case it rests on an actual determination of the facts based on the test conducted in the stations, in the yards, on the trains—in fact, throughout every activity of the railroad, concurrently with its every-day operation in a representative test period; so, it is apparent that the court's findings of an extra cost of intrastate over interstate traffic should not bear the stigma of resting upon testimony similar to that previously rejected by this court.

This question of extra cost is discussed at pages 45-49 of their brief, in which the claim is made that the only extra cost of intrastate over interstate is to be found in the fact that the intrastate incurs two terminal costs to the interstate one. It is also argued that the higher intrastate freight rates compensate for this extra cost, thus attempting to blend two separate and independent matters. The rates cut no figure in ascertaining the cost of transportation, and whether or not

they are compensatory can only be determined by ascertaining the cost of conducting the traffic, without any reference to the rates, or revenue, derived therefrom, and subsequently comparing the cost of traffic with the revenues derived from it. Appellees pursued the only proper, or possible, method of determining the cost of the various classes of traffic, by ascertaining through tests, in actual operation, the cost of intrastate business, and then deducting such cost from the intrastate earnings, in that way obtaining the resultant net gain or loss. Counsel say the fact that there is some return upon the total business, intrastate and interstate combined, makes the result shown by the appellees' exhibits grotesque. This mode of reasoning is a mere juggling of words, and only serves to confuse the issue and becloud the truth.

At page 47 of their brief counsel state that:

"There are certain statistics in this record approved by the railroad's accountants which effectually dispose of any theory that the net results of the intrastate are not as compensatory as the net results of the interstate."

And the further statement that:

"These figures were compiled by Mr. Simson and approved by Mr. Hamilton."

In support of this statement, counsel refer to pages 874-876 of the record. The facts in this connection are that, upon cross examination, Mr. Hamilton stated that certain figures of average gross revenue per ton mile computed by Mr. Simson had been correctly calculated. This will be found at the pages of the record previously referred to. There was no reference whatever to the subject of operating expenses by the witness and no conclusions as to net gain or loss, simply a

statement as to gross revenues per ton mile. How this statement by the witness can be construed as it has been by counsel in the instance mentioned is past our understanding.

Counsel, in criticising the result of the test as reflected in the excess cost of conducting intrastate over interstate traffic, call attention to the fact that the terminal cost per ton of handling intrastate freight and passengers is the same, and draw therefrom the conclusion that there should be no difference except in terminal cost. They overlook the fact that there not only is a double terminal expense on each ton of intrastate freight, growing out of the fact that it has two terminal handlings as compared with one terminal handling of each ton of interstate freight, but also the further fact that as the haul decreases in length the spread of terminal cost is very much larger per ton mile than it is over the longer hauls. The average haul of intrastate freight in Arkansas is twenty-five miles; of interstate freight, it is eighty miles. It is apparent at a glance that when you spread two terminal costs of a ton of intrastate freight over twenty-five miles, you get a very material increase over the cost per ton mile obtained in the spread of one terminal cost over an eighty-mile haul of interstate freight. They also assume that the line cost per ton mile is the same for both classes of freight. That is true when carried on the same train, but counsel overlook the fact that the loading of the local trains is very much lighter than the loading of the through trains; that the local train is a more expensive train per mile to operate than the through train, by reason of having a larger crew, and the fact that the local train requires a longer time on the road to make a given train mileage, and that a very large proportion of the

intrastate freight, and a very small proportion of the interstate freight, is carried on local trains.

Counsel direct attention to the fact that 85 per cent of the freight carried on the local trains is interstate and 15 per cent intrastate, and say that:

"It is rather difficult to see how the heavier expense of the local train can work out a heavier expense for the intrastate traffic when over 85 per cent of its load is interstate traffic."

The proportions of freight which go to make up the total loading of the local trains, and which are reflected in the percentages quoted by counsel, have no real bearing upon the question. On page 1 of exhibit 6, there is set forth separately the net ton miles of revenue freight carried on through trains and on local trains in Arkansas, subdivided in each case between intrastate and interstate. These figures show that of the interstate freight, 36,860,653 ton miles was carried upon through trains and 7,976,402 ton miles upon local trains—or, stated in percentages, 82 per cent of all the interstate freight was carried upon the less expensive through trains and only 18 per cent upon the more expensive local trains. The exhibit shows in the same table that of the intrastate freight, 472,506 ton miles were transported upon through trains and 1,343,339 ton miles were transported upon local trains. Expressed in percentages, the figures show that 74 per cent of the intrastate freight was transported upon the more expensive local trains and 26 per cent upon the less expensive through trains. With 74 per cent of the total intrastate freight and 18 per cent of the total interstate freight carried

upon the more expensive local trains, counsel's contention, as quoted above, ceases to be of any force.

It should be obvious that when the line expenses are divided between intrastate and interstate freight upon the basis of the net ton miles of each class of traffic carried on the through and local trains respectively, in the manner described in appellees' exhibits, there will necessarily be a very material excess of cost per ton mile for intrastate, as compared with interstate business, for line expenses alone, to say nothing of the double terminal cost and the short haul of the intrastate traffic.

The same conditions making for the extra cost of transporting intrastate as compared with interstate freight obtain with intrastate and interstate passenger traffic, as the same methods of ascertaining the extra cost of the intrastate over the interstate have been employed as in the case of the freight traffic, except that instead of the distinction between through and local trains appellees have segregated the travel in ordinary coaches from that in Pullman cars, as is explained in the exhibit.

At page 72 counsel, in discussing the matter of apportioning values on basis of apportionment of operating expenses, states that:

"An error, however small, in the assignment of these expenses quickly runs into big figures in their application to the property values."

And makes a hypothetical illustration of a railroad property, valued at $16,000,000, having operating expenses of

$100,000, which have been assigned 50 per cent each to the freight and passenger services. The illustration assumes an error of $1,000 in the apportionment of these expenses, which, if added to the passenger expenses as a matter of correction, would make the passenger percentage of operating expenses 51 per cent. The illustration then points out that this corrected percentage, applied to the valuation of $16,000,000 would throw $160,000 more property value to the passenger side, and that it would require $9,600 of net income from passenger sources to make a return of 6 per cent upon this additional $160,000 property value.

The fallacy of this illustration is apparent, and it lies in the inconsistent relation of the valuation and operating expense figures assumed. Inasmuch as counsel spoke of a 6 per cent return, it is evident that the period intended to be taken for the illustration is one year. To assume that the total expenses of a railroad property which was valued at $16,000,000 would be but $100,000 per annum is utterly inconsistent with common knowledge. Exhibit 61, filed in this case, shows the value of the property (by stipulation) to be $18,000,000 in round figures, and in operating this property for a year, the same exhibit shows that operating expenses of over $3,000,000 were incurred. The most elementary knowledge of railroad operation would make it plain that a railroad property sufficiently large to be valued at $16,000,000 could not be operated for an entire year with an outlay of only $100,000 for operating expenses. Taking counsel's assumed error of $1,000 and substituting $3,000,000 for the hypothetical figure of $100,000 operating expenses, it follows that the percentage of error which would affect the division of property values is thus re-

duced to *three one-hundredths of one per cent.* When this percentage is applied to the $16,000,000 property value, the amount of property transferred, as in counsel's illustration, to the passenger side, is only $4,800 instead of $160,000, as suggested. To produce a difference of one per cent, as the result of an error, in apportioning expenses on a railroad with a value of $16,000,000 and with operating expenses properly proportioned thereto, namely, $3,000,000, the hypothetical error in distribution of expenses between the freight and passenger services would have to be $30,000 instead of $1,000, as assumed by counsel in their illustration. The fundamental error in the illustration consists in the improper relationship of the operating expense and property value figures quoted as a basis for the illustration.

As to the error of $23,000 in connection with which the hypothetical illustration was made, it can be stated that if worked out to a conclusion in conjunction with the appellees' exhibits, it will be found that the $23,000 applies, not to freight or passenger alone, but to both, and when worked out to an ultimate conclusion on the appellees' basis, makes no difference whatever in the distribution of the property values between those two classes of traffic.

In this connection, it should be remembered that in the hypothetical illustration used by appellants, the error in operating expenses is all thrown to one side, whereas, the difference of $23,000 referred to is spread over both the freight and passenger business.

At page 73 counsel say, with reference to the matter of equating the expenses of prior periods on basis of 1913 results:

"It is a self-evident proposition that the assignment to Arkansas as a whole can not be affected by a redistribution of part of those costs between freight and passenger. The proposition was dealing entirely with the amount of expenses assigned to Arkansas and not their distribution."

This refers directly to the matter of equating the interstate Commerce Commission accounts, either piecemeal, or in total for each of the four general groups, which is discussed at length on the same page. It is evident that neither counsel nor the accountants for the appellants have understood the equating process. In order to assign expenses in the prior periods, it was necessary either to apply the new formula (Exhibit No. 1) in detail in those prior periods (and why this was impracticable has been elsewhere stated) or to reflect the processes of the new formula in those prior periods by a process of equating 1913 results obtained thereunder. From criticism made by counsel, it is apparent that they have considered but one of the results which the equation was designed to effect, that is, the assignment of expenses to the State of Arkansas. The processes of the new formula, which it was necessary to carry back through an equation, were three in number; the assignment of the expenses to the State, their subdivision between the freight and passenger services, and the adjustment of the company material, or nonrevenue costs, between the freight and passenger services. These three steps were worked out in detail in 1913, and it was necessary, if the new formula was to be properly reflected in the prior periods, that all three processes should be carried back, through an equation. In the figures prepared by the appellant's accountants, and discussed on page 73 of the brief, only one of these

processes was worked out, namely, the assignment of expenses to the State.

This is the criticism of the equating method made by the accountants for the appellants, and it was the complete working out of all three processes that practically reversed the results obtained by them, as discussed at page 73 of the brief.

At page 9 counsel say, referring to appellees' exhibits 27-A and 28, that they were filed to correct mistakes which had occurred in Exhibit 27, which is characterized as the final summary of the appellees up to that time.

Counsel seem to have no clear conception of the contents of these exhibits. Neither of them is a final summary. Exhibit 27-A, and its predecessor, 27, covered only the four months of 1907. Exhibit 28 applies to all of the four years and the four months appearing in Exhibit 61, and simply shows the effect of eliminating the rental charge of the Kansas City, Fort Scott & Memphis Railway, which was done at the suggestion of the court. Counsel also refer to the revision of Exhibit 27, which is reflected in Exhibit 27-A, and state that Exhibit 27 needed "reduction to better bases to make it reflect the actual condition of affairs," and then refer to appellants' Exhibits V, W, X and Y. The fact in connection with this matter is that the accountants for the appellants sought to substitute their judgment of bases for division of expenses, for the formula of the railroad, and the reference to this particular matter as an "error" is in itself erroneous. (Testimony of Hamilton) (R. 271-287.)

At page 17 counsel, in discussing the division of value of tracks and facilities between freight and passenger, and line

and terminal, have assumed that all such divisions were made in the ratio of the amount of maintenance expenses of such facilities charged to each of said classes of service. They overlook the fact, as shown by appellees' Exhibit 18, that the value of many individual facilities was directly allocated to freight or passenger or line or terminal, on account of the exclusive use of such facilities by one of these classes of service.

At page 18 it is stated that the appellees have apportioned the "original cost of roadway and structures between the various classes of traffic." It is true that the valuation made by the chief engineer of the railroad reflected the original cost of the property, but this value went out of the case when the stipulated value was substituted for it, and it is upon this stipulated value that the final showing made by the appellees in Exhibit 61 is based. Attention is further called on this page to the fact that the appellees divide certain roadway and structures values on the basis of transportation expenses, instead of using maintenance-of-way expenses for that purpose, as prescribed in the formula. The record shows that subsequently the appellees for comparative purposes made this division on basis of the maintenance-of-way expenses and that the difference in the results obtained was negligible.

At page 19, the testimony of witness Mayer is referred to, in which he claimed that the formula (Exhibit No. 1) is in error in classifying the making up and breaking up of trains as a line expense, and that by reason of charging such expenses to line, intrastate freight traffic is charged with expenses not incurred by it.

The fallacy of this position has been shown by Mr. Hamilton (R. 859-861, 876-877), and Mr. Mayer ultimately was made to admit its fallacy on cross examination (R. 693-700).

On this point, see the opinion of the court (R. 920).

At pages 25 and 26 counsel state that the four months of 1907 was an unfair period of inquiry, because of the great panic which began in that period, by reason of which, it is claimed that the revenue of the railroad was seriously affected.

The statement that this was not a normal period is contradicted by the statistics contained in Exhibit No. 35, which show that the earnings of the four months of 1907 were larger in proportion than in any succeeding year down to and including 1914; but, if this statement had been correct, the fact would be immaterial, as the issue in this case does not depend upon the normality of 1907. Those four months were used in the application for preliminary injunction because they were the most available at that time, but as the four years subsequent to that period, which are used in this case, show that the inhibited rates were confiscatory, it does not matter whether the 1907 period referred to was normal or abnormal.

At page 29 it is stated that, by rearrangement of the "in transit" freight earnings, or what has been referred to in the record as "lap-overs," on the basis indicated in appellants' Exhibit "U," the Arkansas gross freight earnings in the four months of 1907 would be increased $27,316.22.

Counsel neglected to call attention to Mr. Hamilton's testimony at pages 835 and 836, where he stated that he made

a careful investigation of the company's records to determine the facts in connection with this matter, with the result that it was shown that in the four months of 1907 the intrastate freight in transit amounted to only $473.13. This omitted testimony also shows that the intrastate "lap-overs" (so-called) "wiped themselves out" in the four months' period, as the witness, in the testimony which is quoted on page 29, said they would do.

It is also stated on this and the following page, that Mr. Douglas followed his formula in September and departed from it in the three months following, *which is the reverse of the facts.*

It has been shown in the record that the figures obtained on the basis of the old, or Douglas, formula were used only as a back ground for equation. This has been explained at length, and further that these *inconsistencies in the application of the Douglas formula in the one month were carefully corrected before the equation was made.*

It is stated on page 30 that Mr. Hamilton did not dispute the propriety of the formula used by Mr. Douglas.

Reference to the record will show that he disapproved it *supra* 62, and only used it as a background for the equating process, and counsel admit elsewhere that Mr. Hamilton has condemned Mr. Douglas' basis as *academically* unsound.

At page 45 reference is made to the appellees' Exhibit 58, in which taxes, hire of equipment and value of property are average for a series of years. Counsel quote Mr. Hamilton as saying (R. 850):

"That he does not believe in the exhibit prepared by himself."

This is only a partial quotation and is misleading, as by reference to the testimony (R. 849, 850) it will be seen that he produced this exhibit simply to carry the *hypothetical averaging system used by the appellants,* relating to earnings and operating expenses, to taxes, hire of equipment and property values. He says (R. 850):

"I wanted to make the averaging process throughout consistent, so I followed it out to the last detail."

And further:

"I do not believe in the averaging system but on that system this is what it shows when you carry that system into all of the phases of the proposition."

At page 70 counsel say:

"Mr. Hamilton attempts to defend the engine ton mile, which he admits is brought back through the equating process (from 1913) to the four months of 1907, by showing it differed but little from the revenue train mile."

This is a partial quotation taken from pages 854 and 855 of the record. At page 878, referring to his testimony on pages 854 and 855, Mr. Hamilton shows that the foregoing statement is based upon a complete misunderstanding of the record. Counsel again refers to this same proposition at page 77 of their brief, and again make the same mistake as appears on page 70, referred to. This matter has been fully set forth *supra* 101, 102.

QUALIFICATIONS OF WITNESSES.

Counsel attempted to compare the qualifications of Mr. Simson with Mr. Nay and Mr. Mayer with Mr. Hamilton.

Mr. Nay has had thirty-one years' railroad experience and at the present time, and for some years past, has been and is the chief accounting officer of one of the largest railway systems in the world—the Chicago, Rock Island & Pacific Railway. His experience has brought him into constant touch with all of the activities of a railroad, which must necessarily find their ultimate record in the accounting department, or upon the statistical records kept by carriers. Mr. Nay has not been a railroad accountant alone, although that occupation affords opportunities for the broadest grasp of information pertaining to the details of railroad operation. He has also been a devisor and compiler of railroad operating statistics. His testimony in this case shows an intimate familiarity with all the details of railroad operation.

Mr. Simson was employed in railroad service but eleven years, and his last railroad experience was in 1901, fourteen years before he appeared as a witness in this cause. The record discloses that in all his railroad experience, he had not progressed beyond the position of a chief clerk, a general bookkeeper or traveling accountant, engaged in checking up the affairs of station agents. Counsel refer to his experience in commercial accounting practice, as a member of the staff of Haskins & Sells, and the fact that, as an employee of this concern of public accountants, he has been occasionally engaged in the verification and auditing of railroad accounts. This is the total of his railroad experience. He has never held an executive position, nor one of such a character as would give him an insight into the details of railroad *operation,* such as Mr. Nay has enjoyed and improved as his testimony shows, coupled with the fact that such railroad expe-

rience as he has had, terminated fourteen years ago, while Mr. Nay's experience has come continuously down to the present day; and that Mr. Nay's experience and knowledge has been constantly broadening is indicated by his advance in railroad service. Mr. Simson can not be properly compared with Mr. Nay.

Counsel refer to Mr. Hamilton as having had railroad experience of an accounting nature only; this misunderstanding has been due to their lack of familiarity with the character of railroad work embraced in the duties attaching to the positions which Mr. Hamilton has filled in his seventeen years' railroad experience. The facts are that he has been engaged in practically every line of railroad work, and for many years was employed in stations, yards and terminals, where the practical every-day operation of the railroad is carried on. He has been employed, not only in the operating department, but the traffic department and the accounting department as well. His opportunities for observation of every detail of practical operation have been numerous and have covered a long period of time. His intimate knowledge of these subjects is shown by his familiarity with the minutest details of operation, disclosed by the testimony. Since January, 1912, he has been the personal representative of the operating vice president (now one of the receivers) of the St. Louis & San Francisco Railroad, employed particularly in the investigation of operating conditions and operating results at first hand through daily contact with all branches of the service from the section foreman to the general manager. His duties have been to analyze all of the operations of the railroad, to recommend betterments of such operating conditions and prac-

tices to the management, and to present information to the executives of the railroad as to the progress and conduct of the company's business in general and in detail. The careful and minutely detailed way, in which the tests reflected in the exhibits in this case were planned and carried out by him, is evidence of his intimate knowledge or railroad operation. The position he now holds—supervisor of efficiency—reporting directly to the receivers of the railroad, indicates the views of the executive officers of the railroad as to his capacity and knowledge of the economics of railroad operation.

Mr. Mayer, at the time he testified in this case, was an employee of the Oklahoma Corporation Commission, and had had eleven years' railroad experience, beginning as a section laborer on the Burlington Railroad, followed by a few months' service as a freight brakeman, with a return to work as a laborer. He was then employed in minor clerical capacities, finally becoming a clerk in the president's office of the M., K. & T., which latter employment he refers to as "in an executive capacity." His last experience was in the accounting department of the same railroad, covering, altogether, fourteen months. Counsel speak of his practical railroad experience having been as much or more than that of Mr. Hamilton, and quote him as authority on matters which could only be passed upon by a trained civil engineer or mechanical engineer, although Mayer, on cross examination, admitted that he had no training as an engineer, and showed by his testimony that he had no knowledge of many important matters connected with the subject on which he was testifying. He had never occupied a position in railroad service which would give him a broad and coherent view of the whole railroad

problem, as had the witnesses for the appellees. He has never been employed in other than minor capacities, and the record discloses that he had never improved his opportunities to broaden his views even in those minor positions, as is shown by his ignorance of the most elementary railroad matters.

Another witness for the appellees was J. A. Frates, general superintendent, having at the time he testified exclusive charge of the operation of 2,700 miles of the St. Louis & San Francisco Railroad, a little more than one-half of that system. He had had thirty years' railroad experience in practically every capacity in the operating department, the last fourteen years of which had been on the railroad of which he is now general superintendent. His intimate knowledge and clear understanding of railroad operating practices and details is apparent throughout all his testimony. He controverted many of the contentions of Mr. Mayer and it is apparent from his testimony that his statements rests upon a thorough knowledge of actual facts and conditions, and not on the conjectural or hearsay matter which underly many of Mr. Mayer's statements.

Mr. Symons, whose testimony was attempted to be overcome by Mr. Simson, is shown not only by his record in railroad service, but by his testimony in this case, to possess very thorough knowledge of all phases of practical railroad operation and intimate knowledge of his own peculiar field—railroad mechanics, not only in itself, but in its relation to all other branches of railroad operation, and that his advice and counsel is sought after by railroad operating officials all over the country. Mr. Simson, whose testimony was offered for

the appellants in opposition to that of Mr. Symons, admitted that he had no experience, upon which to base his conclusions, or practical knowledge whatever of the subject.

APPELLANTS' COMMENTS ON EXPERT TESTIMONY.

Counsel assume that the case made by appellees rests upon expert opinion. That is not the fact. The proof rests upon the formula for dividing operating expenses, charges, etc., which has been filed as Exhibit No. 1 in this case. This formula does not need expert opinion to support it, but, it does require an intimate knowledge of operating conditions in modern American railway practice. In support of the formula no opinion evidence has, in reality, been used, except the opinion of Mr. Symons in regard to the division of equipment repairs. Reasons in support of it, resting upon a knowledge of operating facts have been given by men who had such knowledge intimately and at first hand. A large number of expert railroad men, expert in the sense of experience in every branch of railroad service, collaborated in the preparation of this formula, the names and official capacities of these men are listed in the formula.

In previous rate cases, a large retinue of railroad operating witnesses were brought to testify as to their opinions and judgment of the extra costs of conducting intrastate traffic over interstate, and it was this class of testimony that the court, in the Minnesota Rate Cases, had in mind when it held that the carriers proof should rest on an analysis of the facts rather than upon expert opinion. Such an analysis and investigation in minute detail has been made in this case.

It is upon the facts so developed that the proof rests, and not upon expert opinion as to the aggregate results of the conduct of any branch of the service. The formula itself is the evidence of the views of the men by whom it was devised and prepared, and, in introducing it appellees brought into the case the aggregate knowledge and experience of those men, whose sole purpose in its preparation was to determine what facts would develop the cost of conducting the various classes of traffic, and to devise methods whereby those facts could be ascertained. Their work was done without any knowledge as to the effect it would have in determining the application of rates on any railroad. They dealt with principles only. Tested by the formula, we submit that the proof in this case shows that the enjoined rates during a period of four years and four months, and every part thereof, are insufficient to produce any return upon the property used in the conduct of the appellees' business.

Respectfully submitted,

JOHN M. MOORE,

Attorney for Appellees.

W. F. EVANS,

Of Counsel.

INDEX TO APPENDIX.

For convenient reference we have printed the following exhibits in the appendix, namely:

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1) *

APPENDIX

Exhibit No. 2

PREPARATION OF DATA USED AS FACTORS IN THE ALLOCATION OF EXPENSES, TAXES, RENTALS AND HIRE OF EQUIPMENT, TO THE STATE OF ARKANSAS, AND BETWEEN "LINE" AND "TERMINAL." FREIGHT AND PASSENGER, INTRASTATE AND INTERSTATE, MAIL AND EXPRESS.

The allocation of expenses, taxes, rentals and hire of equipment to Arkansas, and their division between freight and passenger, intrastate and interstate, mail and express, were made by the use of such factors as were obtainable, and which may be properly termed USE UNITS. The application of these factors to the purposes indicated above, is set forth in the formula filed as Exhibit No. 1, and in the explanations and descriptions accompanying the exhibits, in which the expenses, etc., as allocated, are set forth.

Wherever possible, divisions have been made upon factors based upon actual data as to the operation of the railroad, secured either from the records regularly maintained by the railroad in the ordinary conduct of its business, or by special investigations and tests conducted along with the actual every-day operation of the railroad.

Wherever, as stated above, the divisions made were based upon an analysis of the records regularly kept by the railroad, such analysis has in each instance, been carried back to the original authentic source of entry in the railroad's records.

*Pages of the original exhibit.

It is proposed here to set forth the methods employed in gathering the data used in the preparation of exhibits in this case, to secure which, special investigations and tests were necessary.

In making the tests and investigations referred to, a special organization was created upon each operating division of the railroad having mileage within the State of Arkansas. These division organizations were placed in charge of a man drawn from the Division Superintendent's organization, who had had long practical railroad experience and was thoroughly familiar with the operating conditions upon the division of which he had charge. These men were carefully schooled in the requirements of the work entrusted to them. It was their duty to keep in daily touch with the conduct of the tests and investigations being made under their supervision. They were all brought together at a central point at frequent intervals, and examined concerning the conduct of the work entrusted to their charge. Interchanges of views between them were had at these meetings concerning the work in hand, and thorough instructions given them by the representative of the railroad in general charge of the work, upon all phases of it.

In addition to the divisional supervision of the work described above, the representatives of the railroad in general charge of the work, paid frequent visits to the various divisions in order to add their personal supervision to that given to the work locally by the divisional organization. Careful and explicit instructions, in most instances in print, were given to all subordinate employees engaged upon the work, to cover the phases of the work entrusted to them. All of these subordinate employees were carefully instructed as to

the proper conduct of the work entrusted to them before being sent into the field. All such subordinate employees were practical experienced railroad men, and were chosen with regard to their fitness for the particular work entrusted to them.

This statement is made here in order that it may be understood that every care was exercised to safeguard the accuracy of the data collected.

Freight and Mixed Train Performance.

The data of this character collected covered all trains moving wholly or partly within the State of Arkansas during the entire months of November and December, 1913.

The data as to train performance was collected upon a special form provided for that purpose, which is offered in evidence as Exhibit 2-A.

Clerks were placed upon each local freight and mixed train to prepare this report. Special clerks were placed in each yard office where through freight trains began or ended their runs. These special yard clerks prepared the report covering the train in its entirety as it left the terminal. The conductors in charge of through trains were required to enter on the report all of the required data concerning cars or contents of cars, both picked up and set out between the termini of their run. Special yard clerks placed at the arriving terminal were required to enter upon the report all of the required information covering shipments picked up by the through train after leaving the departing terminal, and which was carried into the arriving terminal.

All data entered upon the report, except the calculations as to mileage and ton mileage, was acquired either by the

clerk upon the train, the yard clerks at the terminals, or the conductor in charge of the train, as outlined above, directly from the actual way bills covering freight in the train, and other sources of information at first hand.

The numbers of engines and the numbers and initials of cars, were taken from the equipment as it was handled in the train.

The tare weights of cars were taken from the stenciling upon the cars themselves, except in instances where no such weights were stenciled upon the cars, and in these instances, the actual tare weights of the cars at their last weighing were obtained by the central office of the railroad from the owners of the cars. This refers to both, loaded and empty cars.

All information required by the report (Exhibit 2-A) to be taken from the way bills covering the freight, was so obtained.

In the case of cars not accompanied by regular way bills (such regular way bills having been mailed overhead to destination or to the end of the division), and which were moved upon card or slip way bills, which ordinarily would not yield the information requisite for this special train performance report, agents were required to show upon the face of the card way bill the actual tonnage contained within the car, classified as between intrastate, interstate and company material, having in mind in the classification between State and interstate, the movement of the freight with relation to the boundaries of the State of Arkansas. Special instructions as to showing this information upon card way bills were given in circular form to all agents on the railroad authorized to make such

card way bills. Copy of this circular is offered in evidence as Exhibit 2-B.

The train performance report form (Exhibit 2-A) carries upon its reverse side, explicit instructions as to its preparation, and detailed illustrations of the classification of tonnage as between intrastate, interstate and company material, with reference to its movement within the boundaries of the State of Arkansas, illustrations of several specific movements being contained therein.

The weights shown by train clerks, yard clerks and conductors, classified as between intrastate, interstate and company material, upon this report (Exhibit 2-A), were those appearing upon the face of the way bills at the time they were in their possession.

Upon receipts of these reports at the general offices of the railroad, they were carefully examined as to the accuracy of their preparation, a force of specially trained men being employed for this purpose.

The original weights of the contents of the cars shown upon the report by train clerks, conductors and yard clerks, were, insofar as carload freight is concerned, all checked against the railroad's regular scale station reports, and the original way-billed weights, all corrected to basis of the actual scaling.

(4) The mileage each shipment was hauled in each train was placed upon these reports (Exhibit 2-A) by expert mileage clerks at the general offices of the railroad, and in the same office the application of this mileage to the tonnage upon the report was made, translating the tonnage into ton mileage.

At this same central office, the train and equipment mileage in each separate train was computed.

A careful check was made against train dispatchers' records to see that all freight and mixed trains moving wholly or partially within the State of Arkansas, during the months of November and December, 1913, were covered by the train performance reports (Exhibit 2-A), received at the general office of the railroad.

From these reports were drawn separately for through and local freight trains, and for mixed trains, the engine miles and the gross and net ton miles, the latter being classified as between intrastate, interstate and company material, the gross and net ton miles of mixed trains being classified as between the freight equipment and its contents and passenger equipment.

Passenger Train Performance.

The data of this character collected, covered all trains moving wholly or partly within the State of Arkansas for the entire two months of November and December, 1913.

It was not necessary to place special representatives upon passenger trains in order to secure accurate first hand data as to their performance.

The data required was the passengers carried one mile within the State of Arkansas, classified as between revenue intrastate and revenue interstate, and non-revenue segregated according to the character of passenger vehicle in which they were transported; that is, Pullmans and other passenger-carrying cars, separately.

It was found practicable to secure the desired information accurately from the ticket and cash fare collections turned in to the auditor by conductors and train auditors, supplemented by certain special reports hereinafter described.

A special force of men was employed in the general offices of the railroad to examine, immediately upon their receipt, the ticket and cash fare collections and special reports, made by conductors and train auditors.

An examination of the tickets, cash fare receipts and trip passes *lifted* by conductors and train auditors on each train was made, and from these the passengers carried on transportation *lifted,* on each train, were classified as between revenue intrastate and revenue interstate, and non-revenue, and the distance which each passenger had traveled on each train, determined.

Special reports covering transportation honored *but not lifted,* such as tickets good for a journey beyond the end of the run of the conductor or train auditor on a given train, or annual or other card free transportation retained by the passenger, were required of all train auditors and conductors charged with the collection of transportation credentials on each train running wholly or partially within the State of Arkansas. Samples of these special reports are offered in evidence as Exhibits 2-C and 2-D.

A special envelope was provided in which conductors and train auditors were required to remit separately, for each train carrying Pullman cars, the transportation lifted by them from passengers riding in such cars. By this means it was possible to get a separate record of Pullman passengers one

mile, classified as between revenue interstate, revenue intrastate and non-revenue. A sample of this envelope is offered in evidence as Exhibit 2-E.

The special reports (Exhibits 2-C and 2-D) hereinbefore referred to covering passengers riding on transportation honored but not lifted, carried all of the information requisite to the proper classification of passenger travel, as between intrastate, interstate and non-revenue, and coach and Pullman travel, which would have been afforded by a visualization of the tickets, etc., had the same been lifted.

With this preparation, a special force of men employed in the general office of the railroad, were enabled to make the desired classification of passenger mileage upon all trains running wholly or partly within the State of Arkansas. This data was collated upon a special form prepared for that purpose which is offered in evidence as Exhibit 2-F.

The number of passengers and the extent of their journey on each individual train, the character of equipment in which they were transported and a classification of the number of passengers as between intrastate, interstate and non-revenue, Pullman and other passenger-carrying car travel separately, was entered upon this form.

Specially trained mileage clerks entered upon this form, the mileage traveled, by each passenger, and from this applied to the data derived from the ticket cash fare and pass collections and train auditors' and conductors' special reports (Exhibits 2-C, 2-D and 2-E) the passengers transported one

mile, revenue intrastate, revenue interstate and non-revenue, Pullman and other passenger-carrying car travel separately, within the State of Arkansas, were ascertained.

The force employed in the preparation of this data were specially trained men, whose experience peculiarly fitted them to accurately perform the work assigned to them, several of them having formerly been members of the railroad's regular train auditor staff.

The instructions as to the preparation of the special reports (Exhibits 2-C, 2-D and 2-E) required of train auditors and conductors, were issued in circular form. Copy of this circular is offered in evidence as Exhibit 2-G.

Report of Train Stops and Terminal Delays.

The data of this character collected covered all trains operated wholly or partially within the State of Arkansas during the entire months of November and December, 1913.

In complying with the provisions of the formula filed as Exhibit No. 1, it became necessary to determine what proportion of the time of trains upon the road was properly chargeable to "terminal" service and to "line" service within the meaning of the formula. To this end conductors of all freight, passenger and mixed trains, were required to render a report covering each trip on a form, sample of which is offered in evidence as Exhibit 2-H. Full instructions for the preparation of this report are carried upon the back of the form.

The report showed upon its face the time devoted to station service, and under the heading of "Terminal Delays" the time devoted to switching at the termini of the train's run.

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The aggregate of the station service time and switching time at train terminals, was considered as "terminal" service time.

The percentage relation of this terminal service time and the percentage relation of the balance of the train's time upon the road, plus the delay at the termini of the run other than for switching purposes, to the total time of the train upon the run plus all terminal delays, were determined, and on these percentages were divided between "line" and "terminal," all direct train operation expenses, namely:

Wages of enginemen and trainmen, fuel, water, lubricants and supplies for road locomotives, train supplies.

The percentage relation of "line" and "terminal" service of trains upon the time basis outlined above, was ascertained in the aggregate for all trains operating wholly or partly within the State of Arkansas, but in separate groups for through freight, local freight, mixed and passenger trains.

This recapitulation and application of the data obtained from these conductors' reports was prepared in the general offices of the railroad by a special force of men employed for that purpose.

Switch Engine Foremen's Work Report.

The data of this character collected covered the operation of all switch engines in all yards within the State of Arkansas for the entire months of November and December, 1913.

In order to divide yard expense between "line" and "terminal," and freight and passenger, as provided for in the formula filed as Exhibit No. 1, it became necessary to determine

the time devoted to each class of service, in all yards, within the State of Arkansas. For that purpose switch engine foremen in charge of all switch engines in such yards were required to render a special report daily covering the entire service time of the crews in their charge.

Sample of this report is offered in evidence as Exhibit 2-I. Instructions as to the preparation of this report are given upon the reverse side thereof.

Switch engine foremen were required to indicate for each half hour, the character of service in which the engines and crews under their charge were engaged during the major portion of that half hour, in accordance with the classification prescribed in the report form.

The service time as classified, on these reports was grouped in the general office of the railroad under the headings of "line" and "terminal" and "freight" and "passenger," as follows:

Line Freight.

Making up and breaking up trains, handling cars for icing.

Terminal Freight.

Handling cars (receiving a road haul) for loading and unloading at stations.

Switching cars to and from connecting lines.

Handling cars which were both loaded and unloaded within switching limits of the same yard.

Common to Freight "Line" and "Terminal."

Handling freight cars to and from repair tracks.

Passenger Line.

All passenger switching.

Common to Freight and Passenger, "Line" and "Terminal."

Dead time.

This "dead time" being the unemployed time of the engine crew during regular service hours, was considered as proportionately chargeable to all of the actual services performed by the engine, and was spread over them accordingly.

Towerman's Report of Trains Passing Interlockers.

Each employee in charge of the operation of an interlocker within the State of Arkansas was required to make report for each day during months of November and December, 1913, of all trains passing over the interlocker in his charge. These reports were rendered upon a special form provided for that purpose which is offered in evidence as Exhibit No. 2-J. Full instructions for the preparation of this report is given on its face.

Trains and engines passing over each interlocker were classified between "passenger," "freight," "mixed," "work and wreck," and "switch" service.

The switch service was classified as between freight and passenger according to the character of equipment hauled by switch engines on each individual trip over the interlocker.

These reports were all recapitulated in the general office of the railroad.

The number of work and wreck trains passing each interlocker were spread over the freight, passenger and mixed

trains using the interlocker on basis of the number of trains of each class. A division of the use of interlockers as indicated above was made direct between freight and passenger service (with the apportionment of switch and work service indicated above), the mixed train proportion of use of interlockers being divided between freight and passenger on basis of the freight and passenger gross ton miles in such trains. Having in this way determined the number of train usages of each interlocker chargeable to freight and passenger services (and all of such usage was charged to "line" service), the percentage relation of the number of usages chargeable to freight and passenger service was determined and applied to the division of the expense of maintenance and operation of each interlocker between freight and passenger "line" service.

Tally of Trains Crossing Drawbridges and Passing Points Where Crossing Protection Was Maintained.

Formula filed as Exhibit No. 1 provides that the maintenance and operation of drawbridges and crossing protection devices, and the cost of maintaining flagmen at crossings, shall be divided between freight and passenger on basis of the number of trains of each class passing over each drawbridge or each crossing.

In order to accomplish this an analysis of dispatchers' train sheets was made in the office of Division Superintendents, whose territory was wholly or partially within the State of Arkansas and the number of trains of each class passing over each drawbridge and crossing ascertained therefrom. The number of mixed trains passing over drawbridges and crossings was apportioned between freight and passenger service

on the basis of the gross ton miles of each class in mixed trains. After having in this way ascertained the use made of drawbridges and protected crossings by freight and passenger service, the data so obtained was used as a basis for factors on which to divide the expense of operating and maintaining these drawbridges and crossings between the two services. No portion of this expense was charged to "terminal" service, because, by reason of the location of the drawbridges and protected crossings in Arkansas, no "terminal" service use was made thereof.

Special Report of Station Agents, Used as a Basis for Division of Station Expenses.

In complying with the provisions of the formula, filed as Exhibit No. 1, agents at all stations within the State of Arkansas were required to render a special report of station expense and performance for the months of November and December, 1913. Sample of this report form is offered in evidence as Exhibit No. 2-K. Instructions for the preparation of this report are given on the reverse side thereof.

Special representative was sent out to confer with all agents in the State of Arkansas and to supervise their preparation of these reports to the end that all such reports might be correctly prepared, and upon a uniform basis.

For the purpose of preparing this special report, the agent at each station was required to make a study of the time devoted by himself and the employees under his charge to freight, passenger, mail, express and telegraph service. On basis of this time study, each agent was required to apportion

to the various classes of service, the actual wages paid at his station.

He was also required to prepare a record of the number of tons of freight received at, forwarded from and transferred from car to car at his station, classified as between intrastate and interstate and company material, less than carload and carload separately. He was also required to tabulate the number of cars received at and forwarded from his station loaded with carload freight, the number of cars received and forwarded loaded with less than carload freight, and the gross weight (cars and contents) of all such cars, all classified as between intrastate, interstate and company material. He was also required to show (although the report does not call for this) the number of consignments of intrastate, interstate and company material freight received at and forwarded from his station.

The cost of supplies and other expenses of each separate station were determined from original records in the offices of the Division Superintendents, and there entered on the report rendered by each agent, being divided between freight, passenger, mail, express and telegraph services in proportion to the division of wages made by the agent on basis of his time study. This division, of the cost of supplies and expenses, is provided for in the formula filed as Exhibit No. 1.

The division of wages and station supplies and expenses described above, and made at each individual station within the State of Arkansas, was recapitulated, and such tabulation furnished the division of these expenses between the various classes of service for the State as a whole.

The data as to tonnage and cars handled, prepared by the agent as hereinbefore described, was used as the basis for factors on which to divide various items of "terminal" expense as provided for in the formula, filed as Exhibit No. 1.

Special Reports of Labor and Material Charges Required of Section Foremen.

In order to comply with the provisions of the formula, filed as Exhibit No. 1, and the modifications thereof adopted by the St. Louis and San Francisco Railroad as set forth on pages 4 and 4-A of the formula, all section foremen having charge of tracks within the State of Arkansas were required to keep a special record of labor expended and material used upon the section of the railroad under their charge for the entire months of November and December, 1913. Special representative was sent out on each division of the railroad to confer with each section foreman and to classify all of the tracks under his charge in accordance with the formula, filed as Exhibit No. 1, and to so arrange his time and material books that the charges for labor and material on each separate track or class of tracks entered in these books each day were classified as between "line," "terminal," "freight," "passenger" and "common," as provided for in the formula. From a recapitulation of these time and material books made in the general office of the railroad, the data of this nature as to maintenance of way and structures expenses required for compliance with the provisions of the formula was secured.

EXHIBIT No. 3.

DESCRIPTION OF ANALYSES MADE OF THE COMPANY'S RECORDS, REGULARLY MAINTAINED IN THE ORDINARY CONDUCT OF ITS BUSINESS, TO OBTAIN DATA TO BE USED AS FACTORS IN THE ALLOCATION OF EXPENSES, TAXES, RENTALS, AND HIRE OF EQUIPMENT TO THE STATE OF ARKANSAS, AND BETWEEN LINE AND TERMINAL, FREIGHT AND PASSENGER, INTRASTATE AND INTERSTATE, AND MAIL AND EXPRESS.

The allocation of expenses, taxes, rentals and hire of equipment to Arkansas and their division between freight and passenger, intrastate and interstate, mail and express, were made by using all such factors as were obtainable, and which may be properly termed "USE UNITS."

The application of these factors to the purposes indicated above, is set forth in the formula, filed as Exhibit No. 1, and in the explanations and descriptions accompanying the exhibits in which the expenses, etc., as allocated, are set forth.

Wherever possible, divisions have been made upon factors based upon actual data as to the operation of the railroad, secured either from the records regularly maintained by the railroad in the ordinary conduct of its business, or by special investigations and tests conducted along with the regular every-day operation of the railroad.

*Pages of the original exhibit.

A full description of these special investigations and tests and the methods employed therein, has been set forth in Exhibit No. 2, and Exhibits 2-A, 2-B, 2-C, 2-D, 2-E, 2-F, 2-G, 2-H, 2-I, 2-J and 2-K.

It is purposed here to set forth the methods employed in securing data from the ordinary records of the company upon which to base factors for use in complying with the formula filed as Exhibit No. 1.

The analyses of the company's ordinary records made for the purpose above stated, have in each instance been made from original authentic sources of entry in such records, by a special force of experienced men employed for that purpose.

Location of Expenses, Taxes, Rentals, and Hire of Equipment, to the State of Arkansas.

For this purpose an analysis was made of accounting and related records kept in the offices of the Division Superintendents, and the General Auditor. All original bills, vouchers and other original sources of record were examined in detail and such charges and credits as located themselves entirely to the State of Arkansas were so charged or credited. All charges and credits assignable partially to Arkansas and partially to other States were anaylzed and a proportion thereof assigned to Arkansas upon the bases provided in the formula filed as Exhibit No. 1, and the modifications thereof adopted by the St. Louis & San Francisco Railroad, also set forth in said exhibit. This assignment of expenses, taxes, rentals and hire of equipment to the State of Arkansas as outlined above, was made for the entire year ended June 30, 1913, and also for the months of November and December, 1913.

Allocation of Expenses Assigned to Arkansas Between Line and Terminal, Freight and Passenger, Intrastate and Interstate and Mail and Express.

These allocations were made in accordance with the provisions of the formula filed as Exhibit No. 1, and the modifications thereof adopted by the St. Louis & San Francisco Railroad, as set forth in said exhibit. In some instances, such allocations were made direct from original sources of entry (vouchers, bills and kindred sources), in others, the railroad's regular accounts kept in accordance with the requirements of the Interstate Commerce Commission, themselves afforded the means of making these allocations direct, and in other instances the factors obtained through special tests and investigations (as described in Exhibits 2 and 2-A to 2-K, inclusive), were employed in making these allocations, and in still other instances, factors derived from the railroad's records regularly kept in the ordinary conduct of its business were employed.

A description of the method of preparing the factors derived from the railroad's ordinary records is given hereinafter.

Freight Car Miles, Passenger Car Miles, Work Car Miles, and All Classes of Train Miles.

Wherever train or equipment mileage figures (as described above), for a period other than for the months of November and December, 1913; (the similar data for those two months being secured as outlined in Exhibit No. 2), were used as factors, the mileage figures so used were those regularly compiled by the railroad in the office of its car accountant.

These mileage figures are derived by the car accountant from original reports made by officers and employees in direct charge of the operation of trains, engines and cars. Wherever such reports cover movements entirely within the State of Arkansas, all such movements were charged to that State. Wherever such reports covered movements of train or other units across the boundaries of the State of Arkansas, an analysis of each individual report was made, and an actual assignment of train, engine or car mileage to the State of Arkansas made therefrom.

Net Tons and Net Ton Miles and Passenger and Passenger Miles.

Wherever net ton, net ton mile, passenger, or passenger mile figures for a period other than the months of November and December, 1913 (the similar data for those two months being secured as outlined in Exhibit No. 2), were used as factors, the tonnage, ton mileage, passenger and passenger mileage figures so used were those regularly compiled by the freight and passenger auditors of the railroad for its own usual purposes, and were recorded in the regular statistical records of the railroad.

The railroad, for purposes of reports required by the State regulating bodies, keeps in its records from month to month, an actual assignment of net tons and passengers handled, and net ton miles and passenger miles hauled, prepared from orignal sources, and assigned upon bases of actual allocation to the various States. Wherever figures of this character located to the State of Arkansas have been used in complying with the formula filed as Exhibit No. 1, they have been

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such figures compiled currently each month by the railroad as set forth above.

Car-Foot Miles.

In complying with the provisions of the formula filed as Exhibit No. 1, it became necessary to determine the amount of space used in passenger trains within the State of Arkansas during the months of November and December, 1913, for the transportation of passengers in Pullman cars and in other passenger-carrying cars, separately, and for passenger auxiliary service in baggage, dining, and cafe-observation cars, and for mail and express service. From the passenger train wheel reports regularly rendered by conductors in charge of such trains, the mileage of each car moving in trains within the State of Arkansas during the period indicated above, was ascertained. This mileage of each individual car was multiplied by the actual inside length of the car in feet and inches, determined from the railroad's equipment records, and in the case of Pullman cars, from the Pullman Company's records, the product of such multiplication being expressed in car-foot miles.

The car-foot miles of each individual car were assigned according to the class of service (as outlined above), in which it was used upon each individual trip. In the case of cars employed in two or more services, the division between these various services (individual trips being considered separately) was made according to the number of services in which the car was employed on each individual trip. As illustrations: A baggage car assigned for the transportation of both baggage and express was counted one-half baggage and one-half ex-

press. A baggage car assigned for the transportation of baggage, express and pouch mail was counted one-third each to baggage, mail and express. Combination cars assigned for the transportation of baggage, mail and passengers were counted one-third each to baggage, mail and passenger carrying services. These illustrations will serve to indicate the basis followed, the same principle being followed where a car was assigned to other combinations of services on a single trip.

The car-foot mileage of passenger train equipment in mixed trains was divided between the various classes of service upon the same basis as outlined for equipment in straight passenger trains.

Engine Ton Miles. (4)

In the division between freight and passenger, of some portions of maintenance of way expense charged to line service, the engine ton mile unit was used.

The engine ton mile unit referred to may be defined as follows: It is the total weight of the engine and its tender plus the average lading of the tender with fuel and water, multiplied by the number of miles run by the engine. In preparing this unit for use in the division of expenses indicated above, for the months of November and December, 1913, the mileage of individual engines was secured, in freight service from the train performance report of which sample is filed as Exhibit No. 2-A, and in passenger service from the regular passenger train wheel reports of the railroad. This refers solely to the mileage made by engines within the State of Arkansas. In translating these engine mileages into engine ton miles, the actual weight of each engine and tender was ascertained from

the company's equipment records, and there was added thereto 66 2-3 per cent of the loading capacity of the engine tender for coal and water, reduced to a tonnage basis, 66 2-3 per cent being the approximate average load of fuel and water carried at all times on an engine's tender when in actual service. The total weights of engines and their loaded tenders so obtained were multiplied separately for each individual locomotive in each class of service, by the mileage of such engines, the product being the freight, passenger and mixed engine ton miles.

The mixed train proportion of maintenance of way expenses ascertained on the engine ton mile basis as outlined above, was subdivided between freight and passenger upon basis of the gross ton miles of freight and passenger equipment and contents in such trains, these freight and passenger gross ton miles in mixed trains having been determined on the basis set forth in Exhibit No. 2.

Wages and Fuel—Local and Through Freight Trains and Mixed Trains.

Wages paid local freight train and engine crews, and through freight train and engine crews, separately, were determined from the original time slips and other time-keeping records of the company, and represent, as set forth in subsequent exhibits, an actual allocation to the two classes of trains.

The charges for fuel consumed by local and through freight train engines, separately, were determined as a matter of actual allocation from the company's regular fuel performance records which afford information as to the actual consumption of fuel by each locomotive on each trip.

Same direct allocation of wage and fuel costs as is described above, was made for mixed trains, and the mixed train charges of this character divided between freight and passenger on the basis provided in the formula, the freight proportion of such charges being added to similar charges for local freight trains.

EXHIBIT No. 4.

METHOD OF APPORTIONMENT OF REVENUE TO ARKANSAS AND TO FREIGHT AND PASSENGER INTRASTATE, INTERSTATE, AND MAIL AND EXPRESS TRAFFIC.

Freight Revenue.

INTRASTATE FREIGHT REVENUE earned in Arkansas as set forth in Exhibit No. 22, was taken from the records compiled by the railroad in the ordinary keeping of its accounts, with this exception, that while the railroad in preparing the intrastate revenue figures formerly reported to the State Railroad Commission had made an arbitrary adjustment of its gross intrastate revenue in Arkansas on account of undercharge collections, overcharge payments, switching absorptions and kindred items, in preparing the figures shown as intrastate freight revenue in Exhibit No. 22 filed in this case, covering the year ended June 30, 1913, all such adjustments were analyzed and actually applied against the gross earnings covering the actual road haul to which they attached. The arbitrary adjustments, formerly made by the railroad, of overcharges, switching absorptions, undercharges and kindred items, were upon basis of a road mileage prorate (between States) for the railroad as a whole, and a subsequent division of such assignments to States between intrastate and interstate on the basis of the gross intrastate and interstate,

*Pages of the original exhibit.

directly located, revenues within each State. In the year ended June 30, 1913, the application of this former method, assigned to the State of Arkansas (as shown in the company's regular report to the State Railroad Commission), intrastate freight revenue amounting to $256,195.32. The reworking of the intrastate freight revenues for the year ended June 30, 1913, on basis of the actual allocation provided for in the formula (Exhibit No. 1) and as hereinbefore explained in detail, resulted in an assignment to Arkansas for the year ended June 30, 1913, of intrastate freight revenue amounting to $259,241.05. The variation in the net result of the two methods of assignment being but a trifle over one per cent.

It was felt that this showing justified the railroad in using, in the preparation, Exhibits Nos. 24, 25, 26, 27, filed in this case, and covering the years ended June 30, 1910, 1911 and 1912, and the four months ended December 31, 1907, the figures representing intrastate freight revenue worked up on its usual basis and reported to the State Railroad Commission without the expenditure of the great amount of time and labor necessary to rework these figures on basis of the formula. In any event, it must be conceded that the change in the revenue figures originally reported to the State Railroad Commission, which would have been brought about by the actual allocation of adjustment items previously referred to, was so small that it would have had no appreciable effect upon the ultimate showing as to the return earned upon the value of the property, in the years prior to that ended June 30, 1913.

The apportionment of INTERSTATE FREIGHT REVENUE assigned to Arkansas for each of the periods shown in

Exhibits Nos. 22, 24, 25, 26, 27, was made in the following manner:

For the year ended June 30, 1913, the gross freight revenue accruing to the St. Louis & San Francisco Railroad for the haul of traffic between each station in Arkansas and each station on its line in other States, was tabulated separately, as was also the gross freight revenue accruing to the railroad for its entire haul, between each pair of stations on its line, of traffic which passed entirely through Arkansas *en route*, these tabulations being made from the original revenue records of the railroad. An actual analysis was made of all adjustments of freight revenue, such as overcharges, switching absorptions, undercharges and kindred items, and the results of this analysis, located by separate road hauls between each pair of stations, were deducted from or added to the gross revenues previously set up between each pair of stations as described above, the result being a properly adjusted revenue between each pair of stations for each interstate and transstate separate haul of traffic passing into, out of or through Arkansas. Having so tabulated and adjusted the earnings between each pair of stations, assignment to Arkansas of the total interstate revenue for each separate haul, was made upon the following basis:

Proceeding on the assumption, as indicated by the principle laid down in the formula filed as Exhibit No. 1, that it costs the same per ton for a given terminal or station handling of a ton of intrastate freight that it does for such handling of a ton of interstate freight, and, further, that it costs the same for the haulage of a ton mile of intrastate freight that it does

for a ton mile of interstate freight, and the further assumption, as indicated by the formula, that an allowance of revenue should be made to the States furnishing terminal service to compensate for the cost of such service, and having, in a division of operating expenses, as described in other exhibits filed in the case, determined the cost per ton for terminal service in Arkansas, and the cost per ton mile for line, or haulage, service, in Arkansas, of all freight traffic, and the relation of the terminal cost per ton to the line or haulage cost per ton mile, the terminal cost per ton was reduced to the basis of a cost per ton mile. That is to say, an apportionment of operating expenses based on the test conducted in the months of November and December, 1913, developed that it cost 36.486 cents per ton for terminal service, and .465 cents per ton mile for haulage service in Arkansas during that period. So that the cost of handling one ton in terminal service was equivalent to the cost of hauling a ton 78 miles. Thus, in order to make the revenue allowance described above, to compensate for terminal costs, there was added to the actual road mileage, of each separate interstate haul in Arkansas, 78 miles, and to the mileage proportion of such haul in other States, 78 miles, and these equated mileages were used as factors to divide the adjusted earnings tabulated between each pair of stations, as described above.

This process assumes that the average terminal cost, per ton handled, in Arkansas, is closely reflective of the average cost per ton for similar service in the other states in which the St. Louis & San Francisco Railroad operates, and it further assumes that the average haulage cost per ton mile in Arkansas is closely reflective of the average haulage cost per

ton mile in the other States in which the St. Louis & San Francisco Railroad operates.

It is not considered that these assumptions are violent, for the reason that operating and traffic density conditions in Arkansas are thoroughly typical of such conditions upon the railroad as a whole.

The earnings derived from TRANS-STATE FREIGHT hauled entirely through Arkansas by the St. Louis & San Francisco Railroad were divided between that State and other States in which the St. Louis & San Francisco Railroad enjoyed a haul, on an equated mileage basis, similar to that employed in the assignment of interstate freight revenue to Arkansas, with this exception, that the mileage equivalent allowance for terminal cost was added to the actual mileage haul in the States in which the St. Louis & San Francisco Railroad's haul began and terminated, and no such allowance was added to the Arkansas mileage for the reason that such trans-state freight had no terminal handling in Arkansas, as such handling is construed in the formula filed as Exhibit No. 1, which defines "Terminal Handling" as the expense of *originating and delivering* freight.

In assigning to Arkansas its proportion of earnings on freight which, by reason of its original point of shipment and ultimate destination was classified as trans-state but which was delivered to or received from a connecting line at a junction within the State of Arkansas, one terminal equivalent allowance, as previously described, was added to the mileage made by such freight on the St. Louis & San Francisco Railroad in Arkansas to compensate for the "terminal" service

rendered on such freight at the point where interchanged with the connecting line.

The foregoing under the heading of Interstate and Trans-state Freight describes the assignment of earnings of that character to the State of Arkansas made in the year ended June 30, 1913. Ordinarily, in the past the railroad had made an assignment of interstate and trans-state freight revenue to individual States upon a straight mileage prorate basis.

Comparison of the interstate (including trans-state) revenues shown in the railroad's report to the State Railroad Commission of Arkansas for the year ended June 30, 1913, with the results obtained on the equated mileage basis hereinbefore described, shows that upon the straight mileage prorate basis the railroad had assigned to Arkansas interstate and trans-state revenue which, in the aggregate, was 99.18 per cent of the amount that would have been assigned if the equated mileage basis had been employed. It is believed that the application of the equated mileage basis, in detail, to the revenues of the year ended June 30, 1913, and the comparison of the results thereof with the results of the straight mileage prorate formerly used by the railroad, accurately indicates that relation of the results, which would have been obtained by the detailed application of the equated mileage basis in prior years, to the results which were obtained on a straight mileage prorate basis and reported to the commission in those years. For this reason the Arkansas interstate and trans-state freight earnings reported to the State Railroad Commission in prior years have been adjusted on basis of the relationship of the results of the application of the new formula, to the results obtained under the railroad's former method, in

(4) the year ended June 30, 1913, and the figures representing interstate (including trans-state) freight revenue in Exhibits Nos. 24, 25, 26, 27, have been arrived at on that basis.

Passenger Revenue.

Intrastate and interstate (the latter including trans-state) passenger revenues, set up in Exhibits Nos. 22, 24, 25, 26, 27, covering the years ended June 30, 1913, 1912, 1911 and 1910, and the four months ended December 31, 1907, were assigned to Arkansas on the same basis as hereinbefore described for the assignment of freight revenues, with the exception that the adjustments of overcharges, undercharges, etc., were so small in amount (being about one-tenth of one per cent of total gross passenger revenue assignable to Arkansas in the year ended June 30, 1913), that their analysis in detail was considered immaterial, and adjustment was made in a lump sum against the ascertained interstate revenue assignable to that State. In figuring the terminal revenue allowance to compensate for terminal cost, for purposes of the assignment to Arkansas, of interstate and trans-state revenue in the year ended June 30, 1913, the passenger handled cost, and passenger one mile cost were used in the same manner as the ton handled cost and ton one mile cost in assigning freight revenue; that is to say, an apportionment of operating expenses based on the test conducted in the months of November and December, 1913, developed that it costs 8.677 cents per passenger for terminal service, and 1.242 cents per passenger mile for passenger haulage service, in Arkansas during that period, so that the cost of handling one passenger in terminal service was equivalent to the cost of hauling a passenger seven miles. So in order to make a revenue allowance to com-

pensate for terminal cost, there was added to the actual road mileage of each separate interstate passenger haul in Arkansas, seven miles, and to the mileage proportion of such haul in other States, seven miles, and these equated mileages were used as factors to divide the adjusted earnings tabulated between each pair of stations as is described in the prorate of freight revenue on the preceding pages of this exhibit. The plan followed in assigning trans-state passenger revenues to the State of Arkansas was exactly in line with that followed in assigning the trans-state freight revenue to Arkansas, with the single difference that the mileage equivalent allowance for terminal cost added to the mileage of other States (no such addition being made to Arkansas mileage of trans-state hauls) was seven miles, instead of 78 miles as in the case of freight service.

NOTE: In the assignment hereinafter described of all other revenue accounts, namely:

Excess Baggage,
Mail,
Express,
Other Passenger Train Revenue,
Switch Revenue,
Special Service Train Revenue,
Miscellaneous Transportation Revenue,
Station and Train Privileges,
Parcel Room Receipts,
Storage Freight,
Storage Baggage,
Car Service, and
Miscellaneous Nontransportation Revenue (Interstate Commerce Account No. 19).

The revenues assigned to Arkansas for periods prior to the year ended June 30, 1913, were adjusted on basis of the percentage relationship of the assignment made for the year ended June 30, 1913, under the formula, filed as Exhibit No. 1, to the assignment of such revenues made under the railroad's former method applied in making reports to the State Railroad Commission, with the exception that wherever an actual allocation had been made in the figures reported in prior years to the State Railroad Commission, no such adjustment was necessary, nor was any made, for the reason that the formula filed as Exhibit No. 1 prescribed such actual allocation wherever possible, and such allocations were made of the revenues earned in the year ended June 30, 1913. In some instances the railroad's bases of assignment used in preparing reports to the State Railroad Commission in prior years, were in agreement with that prescribed in the formula, filed as Exhibit No. 1, and no adjustment of the figures reported for these revenues in prior years was necessary, the original figures so reported to the State Railroad Commission being set up in Exhibits Nos. 24, 25, 26, 27.

The allocations of the various classes of revenues described hereinafter, following this note, all refer to the revenues for the entire year ended June 30, 1913.

Excess Baggage Revenue.

INTRASTATE earnings of this character were assigned to Arkansas direct and INTERSTATE earnings of this character were prorated between interested States, and the Arkansas proportion assigned on a straight mileage basis, the actual haul of each movement of excess baggage governing

the classification between State and Interstate and prorate between States.

Parlor and Chair Car Revenue.

The St. Louis & San Francisco Railroad has no earnings of this character.

Mail Revenue.

The earnings from all mail routes located entirely within the State of Arkansas were assigned to that State. The earnings from routes running partly in Arkansas and partly in other States were assigned to Arkansas upon a road mileage prorate of each individual route. No segregation of these earnings was attempted between intrastate and interstate traffic.

Express Revenue.

The express company operating over the St. Louis & San Francisco Railroad had not made any actual assignment of revenues by States for individual railroads, it being its practice to report its total earnings within a given State to the State Railroad Commission or other regulating body in a lump sum, without distinction as to earnings made by it upon lines of individual carriers. Lacking information of this character, the express revenue assigned to Arkansas in Exhibits Nos. 22, 24, 25, 26, 27 has been determined on the following basis:

The contract of the St. Louis & San Francisco Railroad with the Express Company now and previously operating over its line, has carried a guarantee of a minimum payment to the railroad per mile of road operated over by the Express Company. These guarantees vary with individual express

routes and are assumed to be relatively indicative of the earnings accruing to the railroad on the various express routes.

These guarantees were applied to the mileage of each route on the entire St. Louis & San Francisco Railroad, and the guarantee earnings for each State determined upon a mileage basis of individual routes wholly or partially within such States. The resultant guarantee earning figures were totaled for the entire railroad and the percentage relation of such guarantee earnings for Arkansas to the total determined. The Arkansas percentage thus obtained was applied to the total actual express earnings of the St. Louis & San Francisco Railroad, and the amounts so obtained set up in Exhibits Nos. 22, 24, 25, 26, 27, as the express earnings of the railroad in the State of Arkansas.

Milk Revenue on Passenger Trains.

The St. Louis & San Francisco Railroad has no earnings of this character.

Other Passenger Train Revenue.

Earnings of this character consist principally of revenue derived from the hauling of special cars in passenger trains. Earnings of this character, when earned entirely within the State of Arkansas, were all credited to that State. When earned partially in Arkansas and partially in other States, assignment was made to Arkansas upon basis of the road mileage of the haul governing individual items of earnings. The assignment between intrastate and interstate was made upon the basis of the location of the service, each separate item of earnings being analyzed.

Switch Revenue.

All switch revenue earned in Arkansas was credited to that State. The classification of these earnings in Arkansas between intrastate and interstate was made on the basis of road haul to which the switch service attached itself. In analyzing switch revenue collected for other carriers on account of traffic on which the St. Louis & San Francisco Railroad secured no road haul, the records of other carriers were examined, and classification of such earnings between intrastate and interstate was made upon basis of the road haul of the carrier for which the switching was performed. Each individual item of switch earnings was analyzed and classified as above. Debits to this account in the nature of switching paid other companies were classified as between State and interstate in the same manner as is indicated above for switching earned.

Special Service Train Revenue.

Earnings of this character consist of the revenue derived from running chartered trains. Each item of earnings of this character was analyzed, and such as were earned entirely within the State of Arkansas were assigned in total to that State. Of such items as were earned partially in Arkansas and partially in other States there was assigned to Arkansas a straight mileage prorate, each individual item being treated separately. Division of these earnings between freight and passenger, and between intrastate and interstate was made upon the basis of actual allocation.

Miscellaneous Transportation Revenue.

Each item of these earnings was analyzed separately. Such items as were earned entirely within the State of Ark-

ansas were credited in total to that State. Of such items as were earned partially in Arkansas and partially in other States, there was assigned to Arkansas a straight mileage prorate. The classification between freight and passenger intrastate and interstate, was made upon the basis of actual allocation. Where items attached themselves to a road haul, the classification between intrastate and interstate freight and passenger was made upon basis of the road haul to which the item attached.

Station and Train Privileges.

STATION PRIVILEGES: Earnings of this character consist principally of revenues from weighing, vending and other automatic machines located at stations, advertising at stations, news privileges at stations and kindred items. Each item of earnings of this character was analyzed separately. All earnings accruing within the State of Arkansas were credited to that State. All of these earnings are properly creditable to the passenger account. The division between intrastate and interstate being impracticable as a matter of actual allocation, it was made on the basis of revenue passenger miles of each class within the State of Arkansas.

TRAIN PRIVILEGES: Earnings of this character are derived from the granting of privileges for the sale of newspapers, fruits, etc., on trains. The payment received by the railroad is based upon a percentage of the receipts of the News Company from such sales. It was, therefore, thought that the volume of travel, intrastate and interstate, was a fair basis of division of this revenue as between intrastate and interstate. Earnings of this character for the entire line

were divided between States upon a revenue passenger train mile basis, Arkansas being credited with that proportion of the total earnings which the passenger revenue train miles in that State bore to the total passenger revenue train miles of the entire railroad. It being impracticable to assign this expense actually to intrastate or interstate, such assignment was made upon the basis of revenue passenger miles of each class within the State of Arkansas.

Parcel Room Receipts.

Each item of this character of earnings was analyzed separately, and assignment was made to Arkansas of all earnings actually accruing in that State. Division of earnings of this character, assignable to Arkansas, between intrastate and interstate, was made upon the basis of intrastate and interstate passengers using stations within that State.

In making this division, the number of trans-state passengers was excluded from consideration, for the reason that as a usual thing no parcel room earnings are derived, on the St. Louis & San Francisco Railroad, from trans-state passengers.

Storage Freight.

All credits to this account were analyzed, each individual item separately. Assignment was made to Arkansas of all such credits covering earnings accruing within that State. Division of these earnings between intrastate and interstate was made upon the basis of the actual road haul of the shipment upon which storage was collected. Some adjustments in the nature of refunds and some collections not definitely locatable to States and as between intrastate and interstate traffic, were assigned to Arkansas, and to intrastate and inter-

state on the basis of assignment of the locatable credits, as described above.

Storage Baggage.

Each item of earnings of this character was analyzed and such earnings as actually accrued within the State of Arkansas were assigned to that State. An actual division of earnings of this character between intrastate and interstate being impracticable from the railroad's records, such division was made upon the basis of passengers using stations, as described under the head of Parcel Room Receipts.

Car Service.

The same basis of location of earnings to Arkansas and division between intrastate and interstate, that was employed in assigning earnings from "Storage Freight," was employed in the assignment of car service earnings. Revenues of this character were all credited to freight.

Rental of Buildings and Other Property.

Income of this character was considered as being a proper deduction from rentals of similar character paid, which have been treated in Exhibits Nos. 22, 24, 25, 26, 27, as income charges.

The explanation of the allocation of net rentals to the State of Arkansas and their assignment to the various classes of traffic, is detailed in Exhibit No. 5.

Telegraph and Telephone Service.

The St. Louis & San Francisco Railroad has no earnings of this character.

Miscellaneous (Nontransportation) Earnings.

The designation of this account not being sufficiently descriptive, it should be stated that the earnings credited thereto consist, in the main, of revenues derived from the following sources:

Detouring trains of other lines.

Water furnished locomotives of other lines, on their detoured trains.

Use of wyes, turntables, etc., by other lines.

Commission on meal tickets.

Fees in garnishment suits.

Commissions on premiums collected on indemnity bonds of employees.

Commission on collections of casualty insurance premiums.

Profit on rails and ties sold.

Parking charges on passenger cars of private, or other line, ownership.

Bridge tolls of foot passengers and wagons.

Charges for feeding live stock in transit.

These earnings when accruing entirely within the State of Arkansas were all assigned to that State. Where earned partially in Arkansas and partially in other States, Arkansas was assigned its proper relative mileage proportion. Actual allocation was made between intrastate and interstate wherever possible. As an illustration: In the case of earnings derived from detouring foreign line trains (one of the largest items in the account), if the detour was made entirely within Arkansas, the revenue was considered as intrastate. If the

detour was made partially in Arkansas, and partially in another State, the earnings derived therefrom were considered as interstate.

Such items as could not be definitely located to Arkansas or between freight and passenger, intrastate and interstate, were divided under these heads, on the same basis as the location of the operating expenses in I. C. C. Accounts Nos. 106 to 116, inclusive, "General Expenses," as described in a subsequent exhibit. The theory on which this latter division was made was that these earnings, with the exception of detouring, which permits of direct allocation, were of such a character that the expense of securing them was practically all included within the "General Expenses" of the railroad.

Joint Facilities Revenue—Dr.

Joint Facilities Revenue—Cr.

The revenue accrued in the credit side of these accounts consisting entirely of amounts received from other carriers, as the St. Louis & San Francisco Railroad's proportion of rentals collected for the use of portions of depots and concessions in depots, in which the St. Louis & San Francisco Railroad is the tenant of another line, and the entries on the debit side of these accounts representing proportions of rental of a similar character paid to other lines by the St. Louis & San Francisco Railroad, where it is the landlord line, have been treated as a proper deduction from rentals paid under the head of "Income Charges," detail of the assignment of which is set forth in a subsequent exhibit.

EXHIBIT No. 5.

METHOD OF ASSIGNMENT TO ARKANSAS AND APPORTIONMENT BETWEEN FREIGHT AND PASSENGER, INTRASTATE AND INTERSTATE, MAIL AND EXPRESS TRAFFIC, OF TAXES, RENTALS AND HIRE OF EQUIPMENT.

Taxes.

Taxes accrued upon the books of the railroad during each of the periods covered by Exhibits Nos. 22, 24, 25, 26, 27, have been set up therein. The basis of assessment in Arkansas is on value of the physical property, consideration, however, being given to its earning capacity and other items affecting its value as a going concern. The value determined, however, is placed upon the physical property and the tax levy made upon that basis. The apportionment of State tax, therefore, in Exhibits Nos. 22, 24, 25, 26, 27, between freight and passenger, intrastate, interstate, mail and express, has followed the division of the valuation of the property made as prescribed in the formula filed as Exhibit No. 1, and as set forth in Exhibit No. 18.

Federal taxes have been assigned to Arkansas and prorated between the various classes of traffic on the basis provided for in the formula, filed as Exhibit No. 1.

*Pages of the original exhibit.

Rentals.

All rentals earned and rentals incurred, as properly accrued and shown on the railroad's books, for the periods covered by Exhibits Nos. 22, 24, 25, 26, 27, have been set up in such exhibits in one lump sum as a net credit for each period (the rental earned in each period having exceeded the rental charges incurred). The rentals earned by the railroad and treated as set forth herein, consist of items of the following character:

Rental of joint tracks, depots and Memphis and Van Buren bridges. (Interstate Commerce Account "Joint Facilities Rent Income.")

Rentals of buildings and other property. (Interstate Commerce Revenue Account No. 18.)

Proportion accruing to the St. Louis & San Francisco Railroad, of space rental for sundry concessions in joint stations. (Interstate Commerce Revenue Account No. 21.)

The rentals incurred by the railroad, and treated as set forth herein, consist of items of the following character:

Rentals of miscellaneous joint tracks and depots. (Interstate Commerce Account "Joint Facility Rent—Deductions.")

Rental paid for the use of the Kansas City, Fort Scott & Memphis Railway.

All rentals earned or incurred wholly within the State of Arkansas have been credited or charged entirely to that State.

Of rentals earned from, and incurred on account of, tracks and other facilities lying partially in Arkansas and

partially in other States, there has been assigned to Arkansas its road mileage proportion, based upon the mileage of each individual track or facility. The apportionment of the debits or credits for rental assigned to the State of Arkansas, as hereinbefore described, was made between freight and passenger, and mail and express on basis of actual use of the rented property or facility wherever possible, and where actual use location was not practicable, such assignment was made on basis of the assignment of operating charges and credits in Interstate Commerce Accounts Nos. 22, 23, 51, 52, 77, 78, 104, 105, 115 and 116, these being the joint facility operating debit and credit accounts covering the operating expenses of tracks, facilities, etc., the rentals earned from, or incurred on account of the use of which, were apportioned to Arkansas, as outlined above. These joint facility expense account charges and credits are based upon the use made of each facility by the various classes of service, and reflect such use. Division of these net rentals between intrastate and interstate was made in the case of the freight proportion on basis of respective ton miles of each class, and in the case of the passenger proportion on basis of the respective passenger miles of each class.

One exception to such basis of apportionment of rentals between freight and passenger, intrastate and interstate, and mail and express, was made in the case of rentals earned from the use, by other carriers, of the Memphis bridge. These rentals were divided between freight and passenger on basis of the freight and passenger train mileage made by St. Louis & San Francisco Railroad trains over the bridge and its auxiliary facilities in the State of Arkansas, and the freight and passenger proportions of this rental credit so determined

were assigned to interstate traffic. A car-foot mile proportion of the passenger assignment of this credit was allotted to mail and express, based upon the car-foot mileage space, devoted to mail and express in trains passing over the Memphis bridge and its facilities in Arkansas.

Another exception was made in the division of the rentals paid for the use of the Kansas City, Fort Scott & Memphis Railway (Arkansas proportion assigned upon a road mileage basis). The portion of this rental assigned to Arkansas was divided between freight and passenger on basis of the revenue train miles in each class of services made on the tracks of the Kansas City, Fort Scott & Memphis Railway in Arkansas. The mixed train mileage over the Kansas City, Fort Scott & Memphis Railway in Arkansas was assigned between freight and passenger on basis of the respective freight and passenger gross ton miles in such trains. The freight proportion of this rental was assigned to intrastate and interstate on basis of the respective ton miles of each class hauled over the Kansas City, Fort Scott & Memphis Railway within the State of Arkansas. Of the passenger proportion of this rental charge, a proportion was first assigned to mail and express on basis of the car foot miles chargeable to mail and express on the Kansas City, Fort Scott & Memphis Railway in Arkansas. The remainder of the passenger proportion of this rental charge was subdivided between intrastate and interstate traffic on basis of the respective passenger miles of each class made upon the Kansas City, Fort Scott & Memphis Railway in Arkansas.

The train mile, car foot mile, ton mile and passenger mile figures, wherever used in dividing both the Memphis bridge

rental credit and Kansas City, Fort Scott & Memphis Railway rental charge, were those obtained by special tests made during the months of November and December, 1913.

Rentals of buildings and other property (Interstate Commerce Revenue Account No. 18) have been divided between freight and passenger, intrastate and interstate, mail and express, as provided for in the printed formula (page 7).

Hire of Equipment.

An analysis of the charges and credits to Hire of Equipment was made from the original vouchers issued in payment of hire of equipment charged and bills rendered for the collection of hire of equipment credits. A complete analysis was made of all records of the railroad underlying these bills and vouchers in order to make the proper segregation of charges and credits between locomotives, passenger train cars, freight cars, Pullman cars and work equipment. Having determined the net hire of equipment debit or credit for each class of equipment as set forth above, for the entire railroad, an assignment of a portion thereof was made to Arkansas upon basis of the mileage made by the respective classes of equipment in that State as compared to the mileage of each class of equipment upon the railroad as a whole. The net hire of equipment charge or credit for freight cars on the one hand, and for passenger and Pullman cars on the other, automatically assign themselves to the freight and passenger service. The net charge or credit of this nature covering locomotives was divided between freight and passenger, work and switch service, on basis of the actual mileage made in Arkansas by each individual locomotive in each class of service. The pro-

portion assigned to locomotives in work service was divided between freight and passenger upon basis of the assignment of maintenance-of-way charges in interstate commerce accounts 2 to 17 inclusive, for the reason, that by far the major portion of work locomotive mileage is made in connection with the maintenance of way and structures. The proportion assigned to switch locomotives in Arkansas was divided between freight and passenger on basis of the time devoted to freight and passenger service at all the yards within the State of Arkansas, as developed by an actual time study. The net charge or credit of this nature covering mixed train locomotives was divided between freight and passenger upon basis of the respective gross ton miles made for account of each class of service in mixed trains. The net charge or credit of this nature covering work car equipment was divided between freight and passenger on the basis of maintenance-of-way charges as set forth under the head of locomotives in work service.

Having accomplished a division of the hire of equipment charges and credits assignable to the State of Arkansas between freight and passenger service on the bases hereinbefore outlined, the subdivision between intrastate, interstate, mail and express was made for each class of equipment upon basis of the similar subdivision of operating expenses in the respective equipment repair accounts, as described in Exhibit No. 1 and the modifications thereof adopted by the St. Louis & San Francisco Railroad. This being the same basis as was employed for the assignment of equipment values to the various classes of traffic.

EXHIBIT 21. (1)*

APPORTIONMENT OF OPERATING EXPENSES TO ARKANSAS AND DIVISION THEREOF BETWEEN FREIGHT AND PASSENGER, INTRASTATE AND INTERSTATE, MAIL AND EXPRESS.

The operating expenses assignable to the State of Arkansas for the year ended June 30, 1913, and the division thereof between freight and passenger service, were determined in accordance with the provisions of the formula filed as Exhibit No. 1, and the modifications thereof, as set forth therein, adopted by the St. Louis & San Francisco Railroad. (See also explanatory Exhibits Nos. 2 and 3.)

(One exception made in following the basis laid down in Exhibit No. 1 (as modified) was in the adjustment, between the various classes of service, of the nonrevenue service costs. The principle laid down in the formula was followed, but the adjustment of the nonrevenue service costs for the year, was made on the basis of the similar adjustment for the months of November and December, 1913, as set forth in Exhibits Nos. 10 and 11. That is to say, the percentage of burden or relief on account of nonrevenue service performed by one revenue service for the other in November and December, 1913, was applied in making the adjustment of nonrevenue service costs in the operating expenses of the year ended June 30, 1913.)

(Another exception, in detail but not in principle, was that the passenger operating expenses in the five Interstate Commerce Commission groups under the heads of maintenance-of-Way and Structures, Maintenance of Equipment.

*Pages of the original exhibit.

(2) Traffic Expenses, Transportation Expenses, and General Expenses, determined as hereinbefore set forth, for the year ended June 30, 1913, were divided between passenger, and mail and express on the basis of the relative percentages of car-foot miles in mail and express and passenger carrying service, as determined for the months of November and December, 1913.)

The proportion of passenger expenses chargeable to passenger carrying service (after elimination of mail and express proportion) were divided between intrastate and interstate passenger traffic on basis of the respective passenger miles of each class for the year ended June 30, 1913, there being added, however, to the intrastate passenger miles 15.43 per cent, in arriving at factors for this division, this percentage representing the excess cost per passenger mile of intrastate passenger traffic over interstate passenger traffic, for all passenger operating expenses in the months of November and December, 1913, as set forth in Exhibit No. 17.

The freight proportion of operating expenses, determined as hereinbefore set forth, was divided between intrastate and interstate on basis of the respective ton-miles of each class for the year ended June 30, 1913, there being added, however, to the intrastate ton miles, in arriving at factors for this division, 319.58 per cent, this percentage representing the excess cost per ton mile of intrastate freight traffic over interstate freight traffic, for all freight operating expenses in the months of November and December, 1913, as set forth in Exhibit No. 17.

(3) These calculations which produced the operating expense figures set up in Exhibit No. 22, were as follows:

PASSENGER EXPENSES ASSIGNED TO ARKANSAS AND SUBDIVISION BETWEEN MAIL AND EXPRESS.

	Passenger Proportion. (79.62%)	Mail and Express Proportion. (20.38%)	Total.
Maintenance-of-way and Structures	$249,821.67	$ 63,945.81	$ 313,767.48
Maintenance of Equip.	154,274.96	42,194.50	196,469.46**
Traffic Expenses	42,438.11	.....	42,438.11****
Transportation Exp.,	406,001.94	88,473.89	494,475.83***
General Expenses	26,804.32	6,860.99	33,665.31
Total	$879,341.00	$201,475.19	$1,080,816.19

The percentages shown above represent the proportions of car-foot miles devoted to passenger-carrying and mail and express service respectively, in the months of November and December, 1913.

**The car-foot mile percentage shown above (20.38 per cent) was applied to all maintenance-of-equipment expenses except repairs, renewals and depreciation of passenger train cars. By reason of the exclusion of Pullman car-foot mileage from the prorate of these accounts, mail and express was assigned 23.96 per cent.

***In dividing transportation expenses as above, the car-foot percentage (20.38 per cent) chargeable to mail and express, was not applied to station service, the railroad's proportion of wages of joint baggagemen and express messengers, or the wages of train auditors. The mail and express proportion of station expenses was assigned to that service direct on the basis of the time study made by agents in November and December, 1913, and described in Exhibit No. 2. The railroad's proportion of the wages of joint baggagemen and express

messengers not being chargeable to mail or express, was assigned direct to passenger, as was also the wages of train auditors.

****Traffic Expenses: No car-foot mileage elimination was made to charge mail and express, for the reason that no portion of traffic expenses is chargeable to mail and express traffic.

DIVISION OF PASSENGER EXPENSES ASSIGNED TO ARKANSAS (MAIL AND EXPRESS ELIMINATED AS ABOVE) BETWEEN INTRASTATE AND INTERSTATE TRAFFIC.

	Intrastate.	Interstate.	Total.
Passenger one mile, year ended June 30, 1913	14,401,807	30,609,633	45,011,440
Add 15.43% for excess cost	2,222,199		2,222,199
Total	16,624,006	30,609,633	47,233,639
Percentage of each class	35.20%	64.80%	100.00%

Passenger Expenses (Mail and Express eliminated):	Total	Intrastate Proportion. (35.20%)	Interstate Proportion. (64.80%)
Maintenance-of-way and Structures	$249,821.67	$ 87,937.23	$161,884.44
Maintenance of Equipm't	154,274.96	54,304.79	99,970.17
Traffic Expenses	42,438.11	14,938.21	27,499.90
Transportation Expenses	406,001.94	143,084.34	262,917.60
General Expenses	26,804.32	9,435.12	17,369.20
Total	$879,341.00	$309,699.69	$569,641.31

DIVISION OF FREIGHT EXPENSES ASSIGNED TO ARKANSAS BETWEEN INTRASTATE AND INTERSTATE TRAFFIC:

	Intrastate.	Interstate.	Total.
Tons one mile, year ended June 30, 1913	9,151,859	317,039,391	326,191,250
Add 319.58% for excess cost	29,247,511		29,247,511
Total	38,399,370	317,039,391	355,438,761
Percentage of each class	10.80%	89.20%	100.00%

	Total	Intrastate Proportion. (10.80%)	Interstate Proportion. (89.20%)
Freight Expenses:			
Maintenance-of-way and Structures	$ 363,949.37	$ 39,306.53	$ 324,642.84
Maintenance of Equip.	406,760.75	43,930.16	362,830.59
Traffic Expenses	55,764.96	6,022.62	49,742.34
Transportation Exp.	1,117,178.64	119,815.39	997,363.25
General Expenses	92,100.48	9,291.86	82,808.62
Total	$2,035.754.20	$218,366.56	$1,817.387.64

EXHIBIT 23.

EXPLANATION OF THE METHOD EMPLOYED IN ASCERTAINING THE FIGURES FOR EARNINGS AND EXPENSES ASSIGNED TO ARKANSAS, AND TO FREIGHT AND PASSENGER, INTRASTATE AND INTERSTATE, MAIL AND EXPRESS TRAFFIC, IN THE YEARS ENDED JUNE 30, 1912, 1911 AND 1910, AND THE FOUR MONTHS ENDED DECEMBER 31, 1907, AS SET FORTH IN EXHIBITS NOS. 24, 25, 26 AND 27.

The St. Louis & San Francisco Railroad, in preparing the reports required by the Railroad Commission of the State of Arkansas during the years ended June 30, 1913, 1912, 1911 and 1910, used a formula for the allocation of revenues and expenses to that State which was uniformly applied throughout all of those years. It also had in use uniformly throughout all of the years mentioned a formula for the division of expenses between freight and passenger services for purposes of its own operating comparisons.

In order to accomplish a reassignment of earnings and expenses to Arkansas for the years ended June 30, 1912, 1911 and 1910, on basis of the new formula filed as Exhibit No. 1, in the time at the disposal of the railroad, and to avoid the enormous expense incident to reworking all of the voluminous detail, it was felt that a proper showing of Arkansas earnings and expenses divided between the freight and passenger services in the years ended June 30, 1912, 1911 and 1910, might be made by determining the RELATION of the results ob-

*Pages of the original exhibit.

tained for the year ended June 30, 1913, from an actual application, to the earnings and expenses of the railroad, of the new formula filed as Exhibit No. 1, and the formulas formerly used in making reports to the State Railroad Commission, and dividing expenses between freight and passenger for purposes of operating comparisons, and by equating the earnings and expenses, reported to the State Railroad Commission and as divided between freight and passenger, on basis of the percentage relation of the results of applying the formula filed as Exhibit No. 1 and the results of applying the Railroad Company's old formula to the earnings and expenses of the year ended June 30, 1913, in minute detail. That is to say, if a comparison of the results obtained under the formula filed as Exhibit No. 1, with the results obtained under the application of the railroad's old formula showed that in the year ended June 30, 1913, the new basis assigned, to Arkansas, or to freight and passenger, on a given item of earnings or expenses, 102 per cent of the amount assigned for the same item under the old formula, the amount assigned under the old formula in the years ended June 30, 1912, 1911 and 1910, and the four months ended December 31, 1907, has been increased 2 per cent. If, on the other hand, the amount assigned in the year ended June 30, 1913, under the formula filed as Exhibit No. 1 was 98 per cent of the amount assigned under the old formula in that year, the amount assigned under the old formula in the prior periods was reduced 2 per cent.

It is believed that this process of equation has resulted in a correct reflection of the assignment of earnings and expenses which would have been made to Arkansas, and between freight and passenger services, in the years ended June 30, 1912, 1911

and 1910, if the formula filed as Exhibit No. 1 had been applied thereto in detail.

This equation was applied only to such items as could not be actually allocated to Arkansas, or between freight and passenger, and could only be so allocated by means of a detailed analysis or prorate. Such items as permitted of actual direct allocation without analysis or prorate, were directly allocated in each of the years, namely, intrastate freight and passenger revenues, mail and express earnings, and special service train revenue.

In its report to the State Railroad Commission of Arkansas for the year ended June 30, 1908 (which, of course, included the four months ended December 31, 1907), the railroad had not made any assignment of earnings and expenses to Arkansas, but had reported to the Railroad Commission of that State the earnings and expenses of the entire railroad. In order, therefore, to carry out the plan hereinbefore outlined, it was necessary to assign expenses to Arkansas and between freight and passenger for the four months ended December 31, 1907, on basis of the railroad's old formula used in making such assignments and divisions in the years ended June 30, 1913, 1912, 1911 and 1910. It was then practicable to make the same equation of earnings and expenses for the four months ended December 31, 1907, as was made for the years ended June 30, 1912, 1911 and 1910.

The table on the following page shows the relation of the results of applying the formula filed as Exhibit No. 1, to the results of applying the railroad's old formula, both as to assignment of earnings and expenses to Arkansas, and between freight and passenger, for the year ended June 30, 1913.

YEAR ENDED JUNE 30, 1913.

Earnings:	Amount Assigned to Arkansas Under Old Formula and Reported to State R. R. Commission.	Amount Assigned to Arkansas as Result of Applying New Formula Filed as Exhibit No. 1.	Percentage Relation of Assignment Under New Formula (Ex. No. 1) to Assignment Under Old Formula.
Freight—Interstate	$2,705,751.36	$2,728,169.36	100.82%
Freight—Intrastate	256,195.32	259,241.05*	101.19%
Passenger—Interstate	832,775.14	762,300.53	91.51%
Passenger—Intrastate	407,911.16	407,911.16	100.00%
Excess Baggage	13,391.52	13,598.81	101.55%
Mail	97,329.22	97,329.22	100.00%
Express	125,362.35	125,362.35	100.00%
Other Pas. Train Revenue	746.39	654.67	87.71%
Switch Revenue	13,869.76	12,431.78	89.63%
Special Service Train Rev.	900.70	1,577.13	175.10%
Mis. Transportation Rev.	245.26	261.55	106.64%
Sta. and Train Privileges	3,080.44	2,569.51	83.41%
Parcel Room Receipts	94.30	94.75	100.48%
Storage Freight	5,101.82	5,743.66	112.58%
Storage Baggage	554.80	558.75	100.71%
Car Service	11,621.48	12,815.53	110.28%
Miscellaneous	8,767.89	7,550.75	86.12%
TOTAL EARNINGS	$4,483,698.91	$4,438,170.56	98.98%

Operating Expenses (Freight):	Amount Assigned to Arkansas and Reported to State R. R. Commission—Proportion Assigned to Frt. Under Old Formula.	Amount Assigned to Arkansas Frt. Service Under New Formula Filed as Exhibit No. 1.	Percentage Relation of Assignment Under New Formula (Ex. No. 1) to Assignment Under Old Formula
Maintenance-of-way and Structures	$ 322,071.01	$ 363,949.37	113.00%
Maintenance of Equipm't	410,250.21	406,760.75	99.15%
Traffic Expenses	56,964.49	55,764.96	97.89%
Transportation Expenses	1,010,166.09	1,117,178.64	110.59%
General Expenses	75,619.25	92,100.48	121.80%
TOTAL	$1,875.071.05	$2,035,754.20	108.57%

*Not equated—original assignment allowed to stand, for reasons given on page 1 of Exhibit No. 4.

YEAR ENDED JUNE 30, 1913.

Operating Expenses (Passenger):	Amount Assigned to Arkansas and Reported to State R. R. Commission—Proportion Assigned to Passenger Under Old Formula.	Amount Assigned to Arkansas Passenger Service Under New Formula Filed as Exhibit No. 1.	Percentage Relation of Assignment Under New Formula (Ex. No. 1) to Assignment Under Old Formula.
Maintenance-of-way and Structures	$ 284,123.24	$ 313,767.48	110.43%
Maintenance of Equipm't	209,356.92	196,469.46	93.84%
Traffic Expenses	45,031.01	42,438.11	94.24%
Transportation Expenses	553,598.66	494,475.83	89.32%
General Expenses	66,709.48	33,665.31	50.47%
TOTAL	$1,158,819.31	$1,080,816.19	93.27%

The percentages arrived at as shown in the foregoing tables, were used to equate the earnings and expenses of the years ended June 30, 1912, 1911 and 1910, and the four months ended December 31, 1907, as set forth in Exhibits Nos. 24, 25, 26 and 27, with the exception of intrastate freight and passenger earnings, mail and express earnings, and special service train revenues, which, as previously stated herein, were actually allocated under the old formula in all of the periods mentioned and required no equation to put them upon the basis of the provisions of the new formula filed as Exhibit No. 1.

ASSIGNMENT OF EARNINGS TO INTRASTATE AND INTERSTATE, IN THE YEARS ENDED JUNE 30, 1912, 1911 AND 1910, AND THE FOUR MONTHS ENDED DECEMBER 31, 1907.

In the preceding portion of this exhibit, there has been explained the method employed in assigning, to Arkansas, earnings for the periods indicated above on basis of a com-

parison of the results of applying the railroad's old formula with the results of applying the new formula filed as Exhibit No. 1, in the year ended June 30, 1913. In allocating to intrastate and interstate the earnings so assigned to Arkansas, the following method has been employed.

The major portion of the earnings were susceptible of actual allocation to intrastate and interstate, or had been so allocated under the railroad's old formula. These consisted of the following:

Freight Revenue.

Passenger Revenue.

Special Service Train Revenue.

The remainder of the earnings could not be allocated to intrastate or interstate without a detailed analysis, and the amounts of these assigned to Arkansas on the basis previously explained in the years ended June 30, 1912, 1911 and 1910, and the four months ended December 31, 1907, were divided between intrastate and interstate on basis of the assignment made as the result of analysis or prorate in accordance with provisions of Exhibit No. 1 in the year ended June 30, 1913. The earnings assigned as above consisted of the following:

Excess Baggage.

Other Passenger Train Revenue.

Switch Revenue.

Station and Train Privileges.

Parcel Room Receipts.

Storage Freight.

Storage Baggage.

Car Service.

Miscellaneous Transportation Revenue.

Miscellaneous Revenue (Nontransportation).

The percentage relations of the assignment of the foregoing earnings, intrastate and interstate, in the year ended June 30, 1913 (see Exhibit No. 22), were as follows:

	INTRASTATE.		INTERSTATE.	
	Amount.	Per Cent of Total	Amount.	Per Cent of Total.
Excess Baggage	$5,077.10	37.34%	$ 8,521.71	62.66%
Other Passenger Train Revenue	424.65	64.86%	230.02	35.14%
Switch Revenue.....	125.72*	1.01%*	12,557.50	101.01%
Station and Train Privileges	822.24	32.00%	1,747.27	68.00%
Parcel Room Receipts	56.68	59.82%	38.07	40.18%
Storage Freight.....	517.05	9.00%	5,226.61	91.00%
Storage Baggage ...	337.06	60.32%	221.69	39.68%
Car Service	3,562.67	27.80%	9,252.86	72.20%
Miscellaneous Transportation Revenue:				
Freight Proportion..	None		7.00	100.00%
Passenger Proportion	4.00	1.57%	250.55	98.43%
Miscellaneous Nontransportation Revenue:				
Freight Proportion..	425.70	8.79%	4,419.51	91.21%
Passenger Proportion	551.10	20.37%	2,154.44	79.63%

ASSIGNMENT OF EXPENSES TO MAIL AND EXPRESS TRAFFIC IN THE YEARS ENDED JUNE 30, 1912, 1911 AND 1910, AND THE FOUR MONTHS ENDED DECEMBER 31, 1907.

The mail and express traffic of the periods mentioned above was assigned the same percentage proportion of pas-

*Denotes red figures.

senger expenses as was assigned to mail and express traffic for the year ended June 30, 1913, as set forth in Exhibit No. 22, as follows:

YEAR ENDED JUNE 30, 1913.

	Straight Passenger Expenses.	Mail and Express Expenses.	Total Passenger and Mail and Express Expenses.	Mail and Exp. Per Ct. of Total
Maintenance-of-way and Structures..	$249,821.67	$63,945.81	$313,767.48	20.38%
Maintenance of Equipment	154,274.96	42,194.50	196,469.46	21.48%
Transportation ...	406,001.94	88,473.89	494,475.83	17.89%
General	26,804.32	6,860.99	33,665.31	20.38%

ASSIGNMENT BETWEEN INTRASTATE AND INTERSTATE TRAFFIC FOR THE YEARS ENDED JUNE 30, 1912, 1911 AND 1910, AND THE FOUR MONTHS ENDED DECEMBER 31, 1907, OF THE EXPENSES ASSIGNED TO FREIGHT AND PASSENGER SERVICES (AFTER THE ASSIGNMENT TO MAIL AND EXPRESS TRAFFIC OF ITS PROPORTION OF PASSENGER EXPENSES:

This assignment was made in the case of freight on the basis of the ton miles actually hauled in each of the periods mentioned above, with the percentage of extra cost of intrastate business, as determined for the year ended June 30, 1913, added to the intrastate traffic. This percentage of extra cost was determined as follows:

YEAR ENDED JUNE 30, 1913.

Intrastate Freight Expenses (Exhibit No. 22)	$ 218,366.56	
Intrastate Ton Miles	9,151,859	
Cost per Ton Mile (cents)		2.3860
Interstate Freight Expenses (Exhibit No. 22)	1,817,387.64	
Interstate Ton Miles	317,039,391	
Cost per Ton Mile (cents)		.5732
Excess cost of intrastate over interstate:		
Amount (cents)		1.8128
Percentage		316.25%

The same method was employed in the assignment of passenger expenses between intrastate and interstate, the extra cost burden being determined for the year ended June 30, 1913, as follows:

YEAR ENDED JUNE 30, 1913.

Interstate Passenger Expenses (Exhibit No. 22)	$ 309,699.69	
Intrastate Passenger Miles	14,401,807	
Cost per Passenger Mile (cents)		2.1504
Interstate Passenger Expenses (Exhibit No. 22)	569,641.31	
Interstate Passenger Miles	30,609,633	
Cost per Passenger Mile (cents)		1.8610
Excess cost of intrastate over interstate:		
Amount (cents)		.2894
Percentage		15.55%

It will be noted that the percentages of extra cost shown above for the year ended June 30, 1913, vary slightly from those determined for the months of November and December, 1913 as set forth in Exhibit No. 17, and which were applied in the division of expenses for the year ended June 30, 1913.

The reason for this difference is that in applying the extra cost percentages determined in the months of November and December, 1913, to the expenses of the year ended June 30. 1913, the expenses of loss and damage freight, and loss and damage baggage, were excluded from consideration, as they were actually allocated as between intrastate and interstate.

EXHIBIT No. 24

APPORTIONMENT OF TAXES FOR THE YEAR ENDED JUNE 30, 1912, BETWEEN FREIGHT AND PASSENGER, INTRASTATE AND INTERSTATE, MAIL AND EXPRESS TRAFFIC.

STATE, MUNICIPAL AND COUNTY TAXES:

The Taxes of this character, accruing in Arkansas on the property of the St. Louis and San Francisco Railroad during the year ended June 30, 1912, amounted to $224,900.41.

These Taxes have been divided between the various classes of Traffic on basis of the apportionment of value of property (as set forth on page 11 of this Exhibit) as follows:

APPORTIONMENT OF VALUE OF PROPERTY

	Amount	Percent of Total
INTRASTATE:		
Freight	$ 2,285,350.00	9.21%
Passenger	2,062,502.00	8.31%
INTERSTATE:		
Freight	15,302,242.00	61.66%
Passenger	3,830,805.00	15.43%
MAIL AND EXPRESS	1,337,083.00	5.39%
Total	$24,817,982.00	100.00%

TAXES APPORTIONED ON FOREGOING PERCENTS:

	Percent	Amount of Taxes
INTRASTATE:		
Freight	9.21%	$ 20,713.33
Passenger	8.31%	18,689.23
INTERSTATE:		
Freight	61.66%	138,673.59
Passenger	15.43%	34,702.13
MAIL AND EXPRESS	5.39%	12,122.13
Total	100.00%	$224,900.41

(Continued—1)

EXHIBIT No. 24

APPORTIONMENT OF TAXES FOR THE YEAR ENDED JUNE 30, 1912, BETWEEN FREIGHT AND PASSENGER INTRASTATE AND INTERSTATE, MAIL AND EXPRESS TRAFFIC.

Federal Income Tax:

This assignment was made on basis of the relation of the net earnings assigned to Arkansas on Page 15 of this Exhibit (After deducting operating expenses and State, Municipal and County Taxes) to similar net earnings of the entire line for the same period, as follows:

	Entire Line	Arkansas	Other States
Net Earnings	$11,092,170.07	$962,528.31	$10,129,641.76
Percent of Total	100.00%	8.68%	91.32%
Tax Divided on Above Percents	$ 77,654.70	$ 6,740.43	$ 70,914.27

The Arkansas Proportion of this tax, viz.: 8.68% has been divided between Freight and Passenger, Intrastate, Interstate and Mail and Express on basis of the net earnings of each class (After deducting State, Municipal, and County Taxes) as shown on Page 15 of this Exhibit.

This apportionment was made as follows:

	Arkansas Net Earnings		Arkansas Proportion of Tax
	Amount	Percent of Total	
Intrastate:			
Freight	$ 26,327.33*	2.73%*	$ 184.01*
Passenger	111,143.22	11.54%	777.85
Interstate:			
Freight	646,891.58	67.21%	4,530.24
Passenger	215,942.75	22.43%	1,511.88
Mail and Express	14,878.09	1.55%	104.47
Total	$962,528.31	100.00%	$6,740.43

*Denotes Red Figures.

(Continued--1½)

DETAIL OF NET RENTAL CREDIT—(ARKANSA

INTRASTAT

	FREIGHT	PASSENGER
RENTAL INCOME:		
I. C. C. account No. 18.—Rents of Buildings and Other Property	$ 112.05	$ 3,872.94
Joint Facilities Rent—Income	340.92	2,338.13
Memphis Bridge Rent—Income	.....	.....
TOTAL—Rental Income	$ 452.97	$ 6,211.07
RENTAL DEDUCTIONS:		
Joint Facilities Rent—Deductions	$ 3.05	$ 234.58
Joint Facilities Revenue—Debit (I. C. C. Account No. 20)	.....	3.18
Rental of Kansas City Fort Scott and Memphis Railway	3,607.79	29,207.95
TOTAL—Rental Deductions	$3,610.84	$29,445.71
Net Rental Credit	*$3,157.87	*$23,234.64

*Denotes Red Figures.

EXHIBIT No. 24

APPORTIONMENT OF NET DEBIT FOR HIRE OF EQUIPMENT, FOR THE YEAR ENDED JUNE 30TH, 1912, TO ARKANSAS AND BETWEEN FREIGHT AND PASSENGER, INTRASTATE AND INTERSTATE, MAIL AND EXPRESS TRAFFIC.

Assignment was made to Arkansas on the basis provided in the Formula filed as Exhibit No. 1, as follows:

	Entire Line	Arkansas	Arkansas Percent of Total
Locomotive Mileage	25,551,370	2,616,700	10.24%
Freight Train Car Mileage	231,004,643	24,947,514	10.80%
Passenger Train Car Mileage —Pullman	9,967,832	933,940	9.37%
Passenger Train Car Mileage —Other Cars	40,122,263	4,096,030	10.21%
Work Car Mileage	5,851,171	946,149	16.17%

The net credit or debit for Hire of the various classes of equipment for the entire line for the year ended June 30th, 1912, was apportioned on basis of the above percentages, as follows:

	Net Debit Entire Line	Arkansas Percentage	Arkansas Prop'n of Net Debit
Locomotives (Credit)	$ 64,773.89*	10.24%	$ 6,632.85*
Freight Cars	167,416.54	10.80%	18,080.99
Passenger Train Cars—Pullman	35,502.17	9.37%	3,326.55
Passenger Train Cars—Other Cars (Credit)	59,832.09*	10.21%	6,108.86*
Work Cars (Credit)	41,601.04*	16.17%	6,726.89*
Total Net Debit	$ 36,711.69	.....	$ 1,938.94

*Denotes Red Figures.

(Continued—3)

EXHIBIT No. 24

The Arkansas proportion of Hire of Equipment credit or debit determined as above was divided between Freight and Passenger, Intrastate, Interstate and Mail and Express on basis of the division of Equipment valuation as set forth on page 11 of this Exhibit, as follows:

LOCOMOTIVE CREDIT:

Total locomotive credit was divided between Freight and Passenger on basis of assigned Arkansas valuation as set forth on page 11 of this Exhibit.

	Assigned Value	Percent of Total	Hire of Equipment Credit
Intrastate:			
Freight	$ 87,419.00	7.17%	$ 475.57
Passenger	150,210.00	12.32%	817.17
Interstate:			
Freight	585,232.00	48.00%	3,183.77
Passenger	278,961.00	22.88%	1,517.60
Mail and Express	117,412.00	9.63%	638.74
Total	$1,219,234.00	100.00%	$ 6,632.85

FREIGHT CAR—DEBIT:

Divided as follows:

	Assigned Value	Percent of Total	Hire of Equipment Debit
Intrastate	$ 376,835.00	12.99%	$ 2,348.72
Interstate	2,524,128.00	87.01%	15,732.27
Total	$2,900,963.00	100.00%	$18,080.99

PASSENGER TRAIN CAR—CREDIT:

Divided as follows:

	Assigned Value	Percent of Total	Hire of Equipment Credit
Intrastate	$ 151,483.00	27.49%	$ 764.86
Interstate	281,201.00	51.03%	1,419.81
Mail and Express	118,366.00	21.48%	597.64
Total	$ 551,050.00	100.00%	$ 2,782.31

(Continued—4)

WORK EQUIPMENT—CREDIT:
Divided as follows:

EXHIBIT No. 24.

	Assigned Value	Percent of Total	Hire of Equipment Credit
Intrastate:			
Freight	$ 15,930.00	7.17%	$ 482.32
Passenger	27,372.00	12.32%	828.75
Interstate:			
Freight	106,642.00	48.00%	3,228.91
Passenger	50,833.00	22.88%	1,539.11
Mail and Express	21,395.00	9.63%	647.80
Total	222,172.00	100.00%	$6,726.89

SUMMARY OF ARKANSAS PROPORTION OF NET DEBIT—HIRE OF EQUIPMENT

	Intrastate		Interstate		Mail and Express	Total
	Freight	Passenger	Freight	Passenger		
Locomotives	$ 475.57*	$ 817.17*	$ 3,183.77*	$1,517.60*	$ 638.74*	$ 6,632.85*
Freight Cars	2,348.72	.....	15,732.27	.....	.....	18,080.99
Passenger Cars	.....	764.86*	.....	1,419.81*	597.64*	2,782.31*
Work Equipment	482.32*	828.75*	3,228.91*	1,539.11*	647.80*	6,726.89*
Total	$1,390.83	$2,410.78*	$ 9,319.59	$4,476.52*	$1,884.18*	$ 1,938.94

*Denotes Red Figures.

(Continued—5)

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EXHIBIT No. 24

THE ORIGINAL COST VALUE OF ROADWAY AND STRUCTURES IN ARKANSAS AS OF JUNE 30, 1912, AS DETERMINED BY THE RAILROAD'S CHIEF ENGINEER, ALSO ASSIGNMENT OF EQUIPMENT VALUES TO ARKANSAS AS OF JUNE 30, 1912. DIVISION OF THE VALUE OF ROADWAY AND STRUCTURES AND EQUIPMENT AS OF JUNE 30, 1912, BETWEEN THE VARIOUS CLASSES OF TRAFFIC FOR YEAR ENDED JUNE 30, 1912.

The original cost of the Roadway and Structures property of which the Railroad stood possessed as of June 30, 1912, was determined by the Railroad's Chief Engineer as $19,924,563.00.

In assigning locomotive values to the State of Arkansas for the year ended June 30, 1913, on the basis of "Value Mileage," it was found (as shown in Exhibit No. 18) that 9.13% of the total value of the Railroad's locomotive equipment was assignable to Arkansas, based upon the value and mileage of locomotives operating in Arkansas during that year. During the year ended June 30, 1913, the actual locomotive mileage run in Arkansas was 9.97% of the total locomotive mileage run upon the entire railroad. During the year ended June 30, 1912, the Arkansas proportion of the total actual locomotive mileage of the entire railroad was 10.24%. It is therefore assumed that if the "Value Mileage" percentage of locomotive values assignable to Arkansas in the year ended June 30, 1913, namely 9.13%, be used in assigning locomotive values to Arkansas, in the year ended June 30, 1912, that a *minimum* assignment of locomotive values to Arkansas, in the latter period, will have been made. In justification of this assumption, it should be stated that the Railroad has no regular locomotive assignment to the State of Arkansas, but moves its locomotives at frequent intervals from one operating division to another, and from State to State, and that the types of locomotives in service in Arkansas are representative and typical of the Railroad's entire locomotive equipment.

For the reasons stated above, therefore 9.13 percent of the book value of all locomotives owned by the Company as of June 30, 1912, has been allotted to Arkansas as the locomotive value properly assignable to that State for the year ended June 30, 1912. The book value of all locomotives owned by the Company as of June 30, 1912, was $13,354.154.00. 9.13 percent of $13,354,154.00 is $1,219,234.00.

(Continued—6)

EXHIBIT No. 24

The total book value of freight train cars owned by the Railroad as of June 30, 1912, was $26,860,764.00. Of this amount there has been assigned to Arkansas a car mile proportion, as follows:

	Arkansas	Other States	Total
Freight Train Car Miles—			
Year ended June 30, 1912	24,947,514	206,057,129	231,004,643
Percentage of total	10.80%	89.20%	100.00%
Value divided on above percents	$ 2,900,963	$23,959,801	$ 26,860,764

The total book value of passenger train cars owned by the railroad as of June 30, 1912, was $5,397,157.00. Of this amount there has been assigned to Arkansas a car mile proportion as follows:

	Arkansas	Other States	Total
Passenger Train Car Miles —Year ended June 30, 1912	4,096,030	36,026,233	40,122,263
Percentage of total	10.21%	89.79%	100.00%
Value divided on above percents	$ 551,050	$ 4,846,107	$ 5,397,157

The total book value of work equipment owned by the railroad as of June 30, 1912, was $1,373,974. Of this amount there has been assigned to Arkansas a work car mile proportion as follows:

(Continued—7)

	Arkansas	Other States	Total
Work Car Miles—Year ended June 30, 1912...	946,149	4,905,022	5,851,171
Percentage of Total.....	16.17%	83.83%	100.00%
Value divided on above percents.....	$222,172.00	$1,151,802.00	$1,373,974.00

The total value of equipment assignable to Arkansas for the year ended June 30, 1912, as set forth above is summarized as follows:

Locomotives	$1,219,234.00
Freight Train Cars	2,900,963.00
Passenger Train Cars	551,050.00
Work Equipment	222,172.00
Total	$4,893,419.00

DIVISION OF THE VALUE OF PROPERTY BETWEEN THE VARIOUS CLASSES OF TRAFFIC

Following the method set forth in Exhibit No. 18 for the division of value of property for the year ended June 30, 1913, the proportion of property value applicable to the business of the year ended June 30, 1912, in Arkansas, as set forth in the preceding pages of this Exhibit, has been divided directly between Freight and Passenger Intrastate and Interstate, and Mail and Express, the value of Roadway and Structures on basis of transportation expenses, and the value of Equipment on basis of equipment Maintenance Expenses, as set forth in the table below: (The expense figures used are those of the year ended June 30, 1912:)

	Amount	Percent of Total
TRANSPORTATION EXPENSES:		
Intrastate—Freight	$ 138,012.83	9.06%
" —Passenger	132,625.06	8.70%
Interstate—Freight	924,441.57	60.66%
" —Passenger	246,195.44	16.16%
Mail and Express	82,536.82	5.42%
Total	$1,523,811.72	100.00%

(Continued—8)

	Amount	Percent of Total
LOCOMOTIVE—REPAIRS, RENEWALS AND DEPRECIATION:		
Intrastate—Freight	$ 17,326.55	7.17%
" —Passenger	29,800.96	12.32%
Interstate—Freight	116,057.18	48.00%
" —Passenger	55,320.31	22.88%
Mail and Express	23,285.85	9.63%
Total	$241,790.85	100.00%
FREIGHT TRAIN CARS—REPAIRS, RENEWALS AND DEPRECIATION:		
Intrastate—Freight	$ 26,038.15	12.99%
Interstate—Freight	174,409.47	87.01%
Total	$200,447.62	100.00%
PASSENGER TRAIN CARS—REPAIRS, RENEWALS AND DEPRECIATION:		
Intrastate—Passenger	$ 14,319.24	27.49%
Interstate—Passenger	26,581.19	51.03%
Mail and Express	11,188.75	21.48%
Total	$ 52,089.18	100.00%
WORK EQUIPMENT—REPAIRS, RENEWALS AND DEPRECIATION:		
Intrastate—Freight	$ 1,158.82	7.17%
" —Passenger	1,993.12	12.32%
Interstate—Freight	7,762.03	48.00%
" —Passenger	3,699.89	22.88%
Mail and Express	1,557.38	9.63%
Total	$ 16,171.24	100.00%

The Roadway and Structures value as of June 30, 1912, is, as heretofore stated, $19,924,563.00. The division of this value on basis of transportation expense percentages hereinbefore set forth, has been made as follows:

	Transportation Expense Percentages	Division of Value
Intrastate—Freight	9.06%	$ 1,805,166.00
" —Passenger	8.70%	1,733,437.00
Interstate—Freight	60.66%	12,086,240.00
" —Passenger	16.16%	3,219,810.00
Mail and Express	5.42%	1,079,910.00
Total	100.00%	$19,924,563.00

(Continued—9)

EXHIBIT No. 24

The locomotive valuation as of June 30, 1912, amounting to $1,219,234.30, has been divided on basis of locomotive maintenance expense percentages as follows:

	Locomotive Maintenance Expense Percentages	Division of Value
Intrastate:		
Freight	7.17%	$ 87,419.00
Passenger	12.32%	150,210.00
Interstate:		
Freight	48.00%	585,232.00
Passenger	22.88%	278,961.00
Mail and Express	9.63%	117,412.00
Total	100.00%	$1,219,234.00

The value of freight train cars as of June 30, 1912, amounting to $2,900,962.50, has been divided on basis of freight car maintenance expense percentages, as follows:

	Freight Train Car Maintenance Percentages	Division of Value
Intrastate Freight	12.99%	$ 376,835.00
Interstate Freight	87.01%	2,524,128.00
Total	100.00%	$2,900,963.00

The value of passenger train cars as of June 30, 1912, amounting to $551,049.68, has been divided on basis of passenger train car maintenance expense percentages, as follows:

	Passenger Train Car Maintenance Percentages	Division of Value
Intrastate Passenger	27.49%	$ 151,483.00
Interstate Passenger	51.03%	281,201.00
Mail and Express	21.48%	118,366.00
Total	100.00%	$ 551,050.00

(Continued—10)

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REPLY TO NEW BRIEF of the RAILROAD COMPANY

IN THE

Supreme Court of the United States

NO. 252.

J. SAM ROWLAND, WILLIAM F. McKNIGHT AND THOMAS E. WOOD, RAILROAD COMMISSIONERS OF ARKANSAS, APPELLANTS,

Vs.

ST. LOUIS & SAN FRANCISCO RAILROAD COMPANY, APPELLEES.

"The Frisco Rate Case"

JOSEPH M. HILL,
Special Counsel for the State of Arkansas.

CALVERT-McBRIDE PRINTING CO., FT. SMITH, ARK.

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REPLY TO NEW BRIEF OF THE RAILROAD COMPANY

The Railroad Company has served a new brief, whether in lieu of the former brief or in addition thereto, I am not advised. Much of the former brief is repeated in this brief and this reply will be confined to new matter in it.

SOME OF THE ERRORS IN THE NEW BRIEF.

1. On Page 3, it is stated that the evidence on the preliminary hearing in support of the application for a temporary injunction covered the result of operations for the months of September, October, November and December of 1907, and the evidence on the final hearing was taken in 1914, and covered the fiscal years 1910, 1911, 1912 and 1913 and the last four months of the calendar year 1907. The evidence does not cover the operations for the fiscal years 1910, 1911, 1912 and 1913, other than through a nunc pro tunc proceeding

by which the operations of the two months of November and December, 1913 were transposed back into these years by an equating process, on the theory that these months of November and December, 1913, represented all of the preceding years, as well as the four months' period of 1907. The statement continues that these two months were shown to be in all respects, normal; it is true that Mr. Hamilton put in a series of exhibits known as "Normality Exhibits", which he claimed, did show this fact, but an analysis of these exhibits show the exact contrary as heretofore pointed out in my first brief, on pages 34-35. Next, it is stated, that the application of the test result to the four years, 1910 to 1913, inclusive, was amply sufficient to demonstrate beyond real controversy the confiscatory nature of both the passenger fare statute and the Commission's schedule of freight rates. If the major premise of the railroad company's argument, which is that the formula is correct as a whole, and its many minor premises, such as that the test period of 1913, represented the conditions in 1907, as well as the intervening years, and that the time studies introduced were competent evidence, and not hearsay, and that the hundreds of bases used in the formula were each correct, then this statement might be true.

2. On page 4, it is stated that the defendants realized that the evidence overwhelmingly established the confiscatory nature of the passenger fare statute and the Commission freight rates for the years 1910, 1911, 1912 and 1913 and undertook by a process of equation, to create a hypothetical and fictitious condition for the four months of 1907, for the purpose of basing an argument thereon, that such rates were not confiscatory for that period. No hypothetical condition was created by the exhibits referred to, nor was a fictitious condition created for the four months' period of 1907. The facts were that the normality exhibits put in evidence by the railroad company as a justification of the equating back process pursued by it, showed that the four months' period was not an average, or normal, condition of the affairs of the railroad company. These exhibits were supplemented by others on behalf of the State, and from the exhibits of the railroads and those of the State supplementary thereto, it is found that this was not an average period and not representative. These exhibits of the State merely show the normal and average condition of the road for a series of years and bring the four months period to a normal or average period.

3. On page 5 it is said that the defendants' evidence and brief present to the Court as the proper measure of whether or not the two-cent passenger rate and the Commission's freight rates are compensatory, the combined state and interstate results. There is no basis for this statement. The state did prepare exhibits correcting many of the errors and calculation and methods used by the railroads in their exhibits in order to show the true rate of return that the railroad was earning on all of its business in Arkansas, or to be more accurate, to show the minimum rate of return earned from all of its business in Arkansas. These exhibits show the Railroad on its whole business in the State, was earning far more than a compensatory return; therefore there must be a clear separation of the expenses and property between state and interstate before intra-state rates could be assumed to be confiscatory, and a convincing showing that the intrastate is causing losses. In the Minnesota and Missouri Rate Cases, it developed that several of the railroads were earning on the whole business less than a compensatory return, and were threatened with further reductions through the rates than under attack. When the whole business was shown to be confiscatory and the intrastate business about to be further reduced, in the absence of a showing that the intrastate business was itself compensatory and the losses were due to the interstate rates, the Court awarded injunctions against the further reduction of rates; the very reverse of that situation is presented here. These exhibits referred to by counsel show that the railroad as a whole was making a compensatory return in Arkansas.

When it is found the road as a whole, in the state, is prospering, certainly, it must show a satisfactory plan of separating the expenses and property of the two classes before it carries conviction that one class is a losing venture and the other class so profitable that it makes up those losses and a good return on all the property including that upon which the losses occur.

4. On pages 5 and 6 the State is criticised for not attempting to measure the compensatory nature of the intra-state passenger rate and state freight rates by the return realized on the state business alone, or by the return reduced to a hypothetical rate of two cents per mile while the railroad did not operate upon that rate: in other words, the State is criticis-

ed for not doing what the railroad company has failed to do; that is prepare a proper formula for separating state and interstate expenses and property and revenue.

5. On page 6 it is stated that the plaintiff presented to the Court a proper formula for the allocation of the intra-state revenues, expenses and values to the State and for the apportionment of such expenses and values in accordance with the use made of the property by the several classes of the traffic. If it had been said that plaintiff presented a formula *purporting* to do this, such would have been a correct statement. It is said that complete and convincing evidence was offered in support of the provisions of the formula, the compilation of special statistics thereunder and their applicability to prior years, and the confiscatory results of the two-cent passenger fare statute and the Commission's schedule of freight rates. "The complete and convincing testimony" was the expert opinions of Mr. Nay and Mr. Hamilton that the formula and all of its component parts was correct, and the expert opinion of Mr. Symons assigning, on his experience and judgment the maintenance of equipment expenses between line and terminal, thereby working out an immense amount of expenses against the state under the guise of terminal expenses which do not properly belong to it, and the great bulk of expenses divided on time studies that no one who made them supported as a witness.

Against this opinion and hearsay evidence was the testimony of Mr. Nay given in the former Arkansas Rate Case, condemning in unmeasured terms many of the factors used in this formula, and the mathematical demonstration that the formula was inherently unsound; and the proof from the railroads exhibits supplemented by those prepared by the state that the test period of 1913 was not representative of the period of inquiry, the last four months of 1907, nor representative of the series of years under review, and the inherent and demonstrated errors of it. Furthermore, a comparison of revenues state and interstate, shows that the state rates are higher per ton mile and per passenger mile than the interstate. All of these matters have been developed in preceeding briefs and they are referred in answer to aforesaid dogmatic statements.

6. On page 8 it is said that an apportionment has also been made of interstate revenues of the state for informa-

tion and comparison but that these revenues are not important factors in ascertaining whether or not the passenger fare statute and the Commission freight rates yield a fair return upon the value of the property employed in conducting state business. As far back as Smyth vs. Ames, this Court ruled that an inadequate state revenue cannot be supplemented by an adequate interstate revenue, and as recently as the West Virginia Rate Case this Court ruled that a railroad was entitled to an adequate return from both its passenger and freight rates and one cannot be supplemented by the other in order to make an adequate return on the two combined sufficient to meet the constitutional guaranty.

The state's exhibits demonstrate it to be a fact that the total net return of this railroad in Arkansas is much over seven per cent on the value of its property used by it in the State, and it is thought to be of prime importance that the court know this, in order that the court may properly determine the charge that an integral part of that business is being conducted at a loss. The evidence must be clear, convincing and satisfactory in order to overcome the presumption ordinarily raised that a system of rates promulgated by a State are compensatory, and much more evidence should be required in order to convince the court that the system of rates promulgated by the state are confiscatory when it is shown that the complaining road is earning a good return upon all of its property used in that state, and that the state revenues are appreciably higher per ton per mile and per passenger mile for the state business than for the interstate. These are the demonstrated facts in this case, and therefore the charge of confiscation must be proved through a separation of the state expenses from the interstate and of the state property from the interstate property. In making these calculations the state has used the railroad's theory of computing interstate revenue in the state. This is a new and novel theory finding its genesis in the formula. The plaintiff's exhibit No. 4 (R. p. 1962) sets it forth:

Proceeding on the assumption as indicated by the principle of the formula that it costs the same per ton for a given terminal or station handling of a ton of intrastate freight as it does for a similar handling of a ton of interstate freight, and it costs the same for the haulage of a ton mile of intrastate freight that it does for a ton mile of inter-state freight,

(and the same theory as to passengers), that an allowance of revenue should be made in the state considered to compensate for the cost of terminal service out of the state, and having determined from the operations of the formula the cost per ton per terminal and the cost per ton mile for line expenses (and the same as to passenger service), and therefore, the units of cost per ton per terminal and the units of cost per ton mile (and the same for passengers), was used to obtain a corresponding equivalent mileage to compensate for the expense of the terminal of the interstate freight and passenger outside of the state; in other words, a number of constructive miles were added to the actual miles of each ton and each passenger carried in order to make what would amount to a deduction from the interstate revenue for the expenses of the terminal service of freight and passengers outside the limits of the state. To illustrate by inaccurate figures which are simpler than the actual figures, suppose a ton of freight had a total mileage of 500 miles on the 'Frisco road and 100 miles of this was in Arkansas, under the practice in previous rate cases one-fifth of the revenue derived from that haul would be assigned as the Arkansas proportion of it; assume that neither terminal was in Arkansas, therefore no terminal expenses were incurred in Arkansas for this 500 mile haul and that the terminal expenses were equivalent to a haul of 50 miles, then for the two terminal expenses of this freight, none of which was incurred in Arkansas, there would be added 100 miles, making a constructive mileage of 600 miles, 100 of it being in Arkansas, one sixth of the revenue of this haul, instead of one-fifth of it, would be apportioned as Arkansas' proportion of the interstate revenue for that particular haul. In order to make these calculations and to make the apportionment of the interstate revenue, it was assumed in Exhibit 4 and stated to be a fact that the terminal expenses in Arkansas were closely reflective of the average cost per ton for similar service in the other states in which the St. Louis and San Francisco railroad operates, and it further assumed that the average haulage cost per ton mile in Arkansas was reflective of the average haulage cost per ton mile of the other states in which the St. Louis & San Francisco Railroad operates. Many pages of the new brief are devoted to arguing that the terminal expenses in Arkansas are not closely reflective of the terminal expenses on the balance of the 'Frisco sys-

tem and that the terminal expenses in Arkansas are much higher than the terminal expenses of the system as a whole; in other words much of this argument is to refute the statements in Exhibit 4, and the testimony of Mr. Hamilton in support of it, which has heretofore been set out fully in previous briefs. If it be true that the terminal expenses in Arkansas are much higher than on the 'Frisco system as a whole, then excessive allowances have been made in the way of constructive mileage to compensate for the expenses of terminals outside of Arkansas in the apportionment of interstate revenue to Arkansas; therefore, if the argument of the Railroad Company that its exhibit is untrue and the testimony of Mr. Hamilton in support of it unreliable, necessarily the interstate revenue assigned to Arkansas is too small and on a proper apportionment of it and recalculation of the total net income of the 'Frisco Railroad in Arkansas, it would be shown that the total net income is higher than shown in the state's exhibits wherein it is shown to be considerably over seven per cent per annum.

7. On Page 9 it is said the roadway and the passenger equipment are used chiefly in the line service, but it is necessary to stop passenger trains to perform terminal service, in receiving and unloading passengers, and that the time so spent in this character of service should be and is classed as terminal service. This is one of the erroneous theories in drawing a distinction between what is called line and terminal service in this formula. The passenger train does stop at stations to receive and unload passengers, but that is not its sole purpose there, it receives orders, mail and express, frequently takes water and coal, and doubtless at many stations neither receives or unloads passengers, it stops there in readiness to serve the public. While appellees admitted that the passenger equipment is chiefly in line service, yet Exhibit 8 showing division of operating expenses for the two months of November and December, 1913, show passenger car repairs renewals and depreciation amounted to $7,352.21, of which $4,774.53 was charged to line and $2,577.68 to terminal. Nearly one third goes to terminal for this service. The passengers on the train in many instances receive much service directly from this stop. At times they get off and send telegrams, and use the station facilities, including dining and lunch rooms, during the stop. As the state passengers as a rule have two terminals

in the state and the interstate only one, and frequently none in the state, necessarily the more expense put on the terminal, the more that is charged to the state. To be accurate, 74.27 per cent of it goes against the intrastate passenger (Ex. 16, R. p. 2020).

It is stated on Page 9 that the predominant terminal service of the freight car is the time in which it sets on the industry tracks for unloading and loading; this is but another way of incurring, under the provisions of the Formula, additional expenses for terminal services. The car set out on an industry track will probably take a day for loading or unloading, and for the convenience of the railroad or the shipper it may be there several days; if for the convenience of the shipper he will pay for it in demurrage charges; if for the convenience of the railroad it stays there for its benefit and is being charged to terminal under the provisions of this formula whereby the state traffic will be charged more than double the inter-state traffic for it. These with hundreds of others, illustrate the wrongful distinction drawn between line and terminal where none exists.

8. It is stated at page 14, in all previous Rate Cases yard and station expenses as grouped by the Interstate Commerce Commission were considered terminal and other expenses in the Transportation group were considered line. In no rate cases heretofore determined in any Court so far as I am able to discover has this distinction of line and terminal ever been considered. It is an invention of the expert railroad accountants who prepared this Formula for the purpose of this and other litigation with Arkansas and other states.

9. On page 15 it is stated that maintenance of equipment expenses has heretofore been treated as line expenses. It is enough to repeat that no such distinction has heretofore been made. Next it is said that in the Iron Mountain case estimated allowances as between local and through freight trains were made to compensate for the more frequent stopping and starting in terminal service of the local freight, and other allowances are referred to. In the formula used in that case by the State there were certain assumed allowances, based upon evidence, as to the greater number of stops of a local train over a through train, in order to

reach the comparative expenses of the local and through trains. There was no question presented there of terminal service as developed in this formula. Extra allowance for locomotives in that case was to compensate for the additional wear of the locomotive on the track. These allowances had nothing whatever to do with terminal or line expenses as defined in this formula. There was an earnest effort there to get the real facts of railroad transportation and not to make fictitious distinctions resulting in abnormal charges against one class of traffic.

10. It is stated on pages 15 and 16 that local freight trains are more expensive to operate per mile run than through freight trains and are more expensive to operate per ton mile of their contents than through freight trains. Accepting this as true, then the Formula has utterly failed to do justice to the situation. As stated by Counsel at page 9 the engine of the local train is used as a switch engine for setting out, switching and picking up cars, at way-stations. This is but one of the many uses of the local train for the accommodation of the through freight traffic as well as that which is carried on it. The local freight train must wait on all other trains, and for that reason it is longer on the road for a given distance, as set out at page 15. It has more work to do for the common service than the through freight trains, and for that reason as stated on page 15 has a larger crew. It is also there stated that it is more lightly loaded and must necessarily be in order to accomplish the functions assigned to it. The economical management of freight train service requires the putting into solid trains of as many cars as possible, to run from division point to division point, perishable freight first and so on down the order. The local freight train carries less than carload shipments to intermediate points between division points, carries much of the Company material, picks up and sets out loaded and empty cars indiscriminately for state and interstate service, and for the convenience of the through trains, and for the more rapid movement of the through trains and for the better service of the railroad. Most of these matters are well understood, some of them thoroughly explained by Mr. Frates, one of the Superintendents of the 'Frisco Road, who testified fully as to the handling of the freight service. It is not fair to charge the local freight train with all its own expenses and distribute that expense per ton mile between

the state and inter-state load on it, because much of this expense is incurred for the benefit of the freight carried on the through trains. To illustrate, suppose that the wages of a crew of a local freight for a day's work were $20.00, and from delays in waiting for freight and passenger trains and in setting out and picking up cars for the benefit of through trains, overtime accrued to the crew and their day's wages were $30.00 instead of $20.00. This additional ten dollars, under the workings of this Formula, would be charged solely to the freight carried by the local train and divided between State and interstate, according to the respective ton miles of each; the extra ten dollars would therefore be distributed over the contents of that train, whereas, it should be distributed against the other freight trains and a part of it against the passenger trains which caused some of the delay. The local freight train is aptly called the "*Beast of Burden*" of the railroad; it serves the entire road, it carries much of the Company material, it carries many of the empty cars which are set out at stations and industry tracks, it picks them up when loaded and carries them to through trains. It carries the cotton to the compress points where it is compressed and shipped to the seaports as interstate traffic from the point of origin to its point of destination. It hauls the logs from the logging roads and tramways to the saw mill, for the convenience of the through train which will ultimately carry off the finished lumber. It hauls coal cars from the coal mines to the nearest division point where they are put in the through coal trains, and yet the expense of this train under the provisions of this formula is confined solely to the freight carried upon it which fact alone is enough to damn the fairness of the formula.

11. At page 17 it is stated that the various units used in the formula are natural and appropriate factors for the purpose for which each is used; and again at page 20 after recapitulating only 27 of these units, it is stated the use of these units practically eliminates the necessity of opinion evidence. Each one of these units is dependent upon opinion evidence as to its applicability to the purpose used. Many of them are in daily use for comparative statistical purposes, but none are in use as employed herein. Many of them are invented solely for the purpose of this litigation; and the co-ordination of one to the other is wholly dependent upon the opinions of the authors of the formula; for in-

stance, the factor to divide hundreds of thousands of dollars of common expenses of maintenance of way, engine ton mile, between freight and passenger, was never heard of in railroad accounting or statistics, 'till this formula was invented and it is not today used by any railroad for any purpose other than litigation. The car foot mile is another factor never heard of in practical railroad operation, something similar to it was advanced before a Congressional Committee which was investigating the prices to be paid the railroads for carrying mail a good many years ago. The railroads fought it very vigorously. The use of the general managers' percentages for dividing the equipment repairs between line and terminal is dependent wholly upon the opinion of Mr. Symons. The applicability of many of the other units are dependent upon the time studies made by employees and none of these employes testified to the truthfulness of the time studies made by them. They made out their reports on the blanks furnished them for the purpose of this suit, sent them in to Mr. Hamilton's office and he compiled them and testified that he thought they had been accurately made, according to his instructions, and that is all of the evidence that was introduced in regard to the time studies, by which it is proposed to divide at least fifty per cent of the expenses of the railroad company, and yet it is said that the use of these units eliminates the necessity of opinion evidence!

12. An argument is made on page 22 against the apportionment of freight terminal expenses on the basis of the ton miles; this is setting up a straw man and knocking him down. The terminal expenses as worked out in this formula are swollen beyond recognition, but no one discusses their distribution on the ton mile basis. A fallacious argument made in discussing this is that as the state ton proceeds about one-fifth of the distance of the interstate ton and is handled ordinarily twice for once of the interstate, that there would be ten terminal handlings for each intra-state ton to one of the interstate, and therefore the division of this terminal expenses on the ton mile basis would be to charge ten times too much to the interstate. The question of terminal expenses or line expenses cannot be worked out on average hauls. The formula claims that it prescribes a method of ascertaining every dollar of terminal expense and every dollar of line

expense. If that be true, the length of the haul has no relation to the expenses as ascertained under the formula. It purports to get the actual terminal expenses and the actual tons using the terminal, and the actual passengers using the terminal, and if it accomplishes what it purports to accomplish, then the length of the haul is not a factor for consideration.

13. It is stated at page 23 that the application of the formula has practically eliminated the necessity of that character of expert evidence which was frequently used in former rate cases. In lieu of that class of expert testimony is introduced another class of expert testimony. The station agents are made experts as to the division of the time of themselves and of the employees in the station between freight and passenger, express, United States mail, and telegraph. (See exhibit 2K). Said experts in this case did not go on the stand as witnesses to express their opinions as to how such divisions were made and subject themselves to cross-examination. They simply made out their reports, sent them to Mr. Hamilton's office and he did the rest. Another class of experts was the switch engine foremen. They had to divide the work of their engines and crews between making up and breaking up trains, handling cars for icing, handling cars for loading and unloading, at station yards, switching cars to and from connecting lines, handling cars loaded out of switching limits, for unloading within switching limits, handling freight cars to and from rip tracks, and all passenger switching; and divide the time in to one-half hour periods, pursuant to exhibit 2 I; and none of them went upon the stand and explained how he had done this work. They simply made their reports to Mr. Hamilton, and he did the rest. Then the conductors of trains, freight and passenger, had to be experts on deciding, as shown in Exhibit 2H, the total elapsed time of each stop, the time on account of train operations, and the balance of the stop for station service and switching, and terminal delays and other causes, as well as to give statistical information as to the hour and minute of arrival and departure. This isn't the only class of expert testimony in this case; it is admitted at page 23 that in one instance, that of equipment maintenance expenses, must be divided on experience and judgment. This is about

one-fifth of the total expenses of the railroad and it is divided between line and terminal on the experience and opinion of Mr. Symons, supporting the general managers' percentages. The general managers did not appear. Mr. Symons did go upon the witness stand and give the faith that was in him and he was cross-examined. His testimony has been discussed fully in previous briefs and particularly in the reply brief, pages 12-16. It is the same class of testimony that was given in the other rate cases by very eminent railroad officials, estimating or guessing at percentages of extra cost of state over interstate business. It is merely opinion based on railroad experience, and this Court, speaking through Mr. Justice Hughes, said it was an insufficient basis upon which to invalidate a system of rates promulgated by a state. This is not the only class of expert testimony in lieu of the eliminated experts referred to. The engine ton mile is based wholly upon the opinion of Mr. Hamilton and Mr. Nay, both of them are accountants and not experienced in engineering or transportation. These are not the only expert witnesses in lieu of the eliminated ones; the formula itself rests upon nothing but expert opinion, its authors were five bright, shrewd accountants, preparing a formula for the purpose of their roads carrying on litigation with the various States over their rates. This subject is discussed in the first brief (pages 49-60).

14. At page 27 it is stated, generally speaking, from the beginning of rate litigation in 1907 train expenses were treated as line, station expenses were treated as terminal, and yard expenses according to use. This is the first rate case making use of these distinctions. On page 28 it is said recognition of the greater terminal expenses incurred by the local trains was attempted to be given effect by the addition of arbitrary percentages of the cost of transportation of local over through trains per movement unit. The Iron Mountain case is instanced, and it is stated that the State divided maintenance of freight cars between local and through service by first assigning 21.5 per cent of the total freight car repairs to stopping and staring at way stations, and 13.5 per cent for terminal handlings. Then it is stated that for the purpose of equating between local and through service the way station stopping and starting percentage of the local

train was multiplied by 4 and the terminal handling per centage by 2, assuming that there was as much as four way station stops of cars on local trains to one of cars on through trains, and that each car on the local train received twice as many terminal handlings as each car on the through train. The processes referred to and percentages mentioned in the Iron Mountain case were for a totally different purpose than is stated. In that case there was much testimony adduced by the Railroad Company to the effect that the intra-state traffic, particularly freight traffic, was much more expensive than interstate owing to the alleged theory that the local train was largely composed of intrastate freight. In order to meet this contention the state caused an analysis to be made for certain periods selected by the Railroad Company for tests, of the expenses and consists of the local and through trains. Where there was additional service calling for additional expenses of the local train, the extent of it was ascertained and translated into actual figures representing it. As the local train started and stopped more frequently than the through train, an estimate, based on testimony was made of them. Wellington, an accepted authority on railroad economics, allocated the contributing causes of equipment repairs, and his table was used. One of the principal causes was starting and stopping, and as the local train made more stops than the through train an allowance was made covering the additional stops so as to bring them on a parity for this contributing cause. The other percentages added to the local train and the locomotives were based on similar principles and none of them had the remotest bearing on the line and terminal division as promuglated in this formula. At pages 30 and 31 reference is made to the decision of the Oklahoma Corporation Commission, and excerpts taken from its opinion, seeking to justify the definition of terminal in this formula. The Oklahoma Corporation Commission made an earnest effort to separate the expenses between state and interstate traffic. It adopted many of the provisions of the Arkansas Formula and created numerous divisions of its own, and the excerpts quoted only refer to one phase of the plan worked out by that Commission. Take the plan as a whole and it is radically different in principle and in detail from the Formula promulgated by the railroad in this case.

15. At page 68 it is stated that the evidence of Mr. Hamilton in regard to the test period being a normal period was wholly uncontradicted and the defendants did not attempt to controvert it or produce any evidence on that point. Mr. Hamilton only introduced his normality exhibits and expressed his opinion that they proved normality of the periods, but the State has pointed out in its previous briefs that these exhibits destroyed the alleged normality of the periods in question; the variations shown are too wide to permit one to represent the other period. The State supplemented these exhibits with others giving more fully the variations and prepared a series of exhibits demonstrating that neither the period of inquiry in 1907 nor the two test months in 1913 were representative of the operating conditions of the road for a series of years. In order to prove this these exhibits bring the period of enquiry to a normal average. All this has been discussed in previous briefs and it is passing strange that such a statement is to be now found in the brief.

16. At page 70 it is said that all of the records of the railroad company including the calculations and detail work it prepared in connection with the tests as well as the regular records were submitted to and checked by the State's accountants extending over a period of several months, and that no errors of any magnitude or having any material effect on the results were developed by them; we respectfully refer the Court to Exhibits R. S. U. V. W. and X, each of which made corrections of specific errors, most if not all of which were admitted by Mr. Hamilton as heretofore pointed out, pages 25-30 of the first brief.

17. At page 73 it is said that in the brief for the State in the first Arkansas Rate Case it was stated, from the original record in Smythe vs. Ames, 169 U. S., 466, the test period in that case was two months. While this is a statement outside the record and a collateral matter, yet it is well to examine the accuracy of it. On pages 79-83 of the brief referred to is an analysis of the facts in Smythe vs. Ames, taken from the record; the testimony of Mr. Randall, ticket auditor for the Burlington & Missouri Railroad Company, was reviewed. He had made his calculations for the whole business for the year 1892 in Nebraska by taking the business of June and September and finding the whole busi-

ness of these months and ascertaining the intrastate business for these months, which was 21.21 per cent of the whole earnings. He applied this percentage to the whole year to get the intra-state earnings of the year; and this percentage was also applied to the expenses in order to get the intra-state expenses for the year; he used the revenue basis. It was stated that Mr. Randall was the only witness making his calculations on the revenue basis, and the basis used by the other roads was set out. It was also shown that Randall's revenue theory and his two months test were not used by either Judge Brewer in deciding the case or by this Court in the opinion rendered by it. The case was decided upon the evidence of Mr. Dillworth, a witness for the state.

18. On page 87 is an explanation of the car foot mile as used in the formula and it is said that this identical basis of apportionment was employed and approved by the State in the Iron Mountain case; this is another erroneous statement outside of the record; the record in that case shows that there was a space basis used to separate expense of express and baggage, etc., but this space basis was not used as the car foot mile is used in this Formula.

19. At page 101 it is stated in the former rate cases it has been considered by all parties that there is an excess cost incident to the conduct of intrastate business, both freight and passenger over interstate business; this is another erroneous statement outside of the record, in so far as it refers to the Arkansas Rate Cases. The State prepared exhibits in those cases showing what it contended was the minimum net income of each of the roads and the rate of return upon the property devoted to each class of business. Exhibit V. of the Allen record shows on the St. Louis Southwestern Railroad Company the state freight was making a net return upon the property devoted to that service of 13.99 per cent and the interstate freight 16 per cent, and the state passenger was making a net return of 5.76 per cent upon the property devoted to that service; while the interstate passenger was making .66 in the red, return on the property devoted to the interstate passenger traffic; a deficit of that amount. On the Iron Mountain Railroad, Exhibit N. showed the state freight was earning 10.93 per cent

while the interstate freight was earning 9.84 per cent and the state passenger was earning 5.21 per cent while the interstate passenger was in the red 3.44 per cent. Thus it is seen that the contention of the State was that the state passenger was earning a modest return on both roads and the interstate passenger business was losing on both roads, and that the state freight was earning more on the Iron Mountain than the interstate; while in the St. Louis Southwestern the interstate freight was earning more than the state freight business. This contention translated into figures is so consonant to the established facts in regard to the state and interstate passenger traffic that there can be little question of its truth. It was shown in the Allen record that the interstate passenger rate was less than the state passenger rate of 2 cents per mile, as in this case it is shown that during the four months on inquiry in 1907 while the state passenger rate of 2 cents per mile was in force the total earnings per mile from it was, in mills, 20.07, while the interstate rate, in mills, was 18.99. It is well established that the interstate passenger service carries a more expensive equipment, faster trains, dining and sleeper cars for the accommodation of its patrons, less space per car for the passengers than the crowded day coaches which largely carry the state traffic. As the railroads maintain voluntary rates less than the complained-of 2 cents per mile rate for their more expensive interstate business, they necessarily make less upon it than on the less expensive and more remunerative state business. The railroads' own figures, even under this Formula, shows the interstate passenger mile more expensive than intrastate for the line or haulage costs by 11.3%. (New brief, p. 201). But this is overcome by the excessive terminal costs piled up by the Formula.

This extra cost so far as attached to the state basis is mythical, when applied to the statistics in this case it becomes ridiculous. Exhibit 61 of the railroad on page 6 gives the return under the railroads' Formula applied to the agreed value for the total property for the four months in 1907 and shows a return on the interstate passenger of 7.05 per cent and a loss on the state passenger of $4630.31; while maintaining a rate less than the state rate per mile the interstate passengers had largely been hauled on expensive trains, 75 per cent of the Pullman passengers being inter-

state, and these trains carried diners and auxiliary cars and were not crowded as are the less expensive trains which haul the state passengers for the short haul which exists in Arkansas. The interstate revenue had been adjusted in this exhibit so as to compensate for the terminals outside of the state, and even after this is done according to the workings of this Formula the company is making a comfortable return on the interstate passenger traffic and losing money on the state passenger traffic, which costs less per passenger mile to haul by 11.3%.

On the freight side of it the ridiculousness, if possible, is even more apparent. The revenue per ton per mile for state freight is 24.79 mills, while the revenue per ton mile for interstate freight is 7.76 mills, more than three times as much per ton mile of the state than from the interstate, and in the calculation in the exhibit, interstate revenue has been equated by constructive mileage, deducting therefrom the cost of the terminals outside of the state and yet it works out that the interstate freight was making 5.61 per cent while the intrastate freight entailed a loss of $9308.59. In other words, after allowing for the extra cost of the terminals outside of the state in computing the revenue assigned to the state, the Formula works out a moderate rate of return on the interstate freight carried on a rate of less than one-third per ton mile than the intrastate and works out that the state freight causes a loss of nearly ten thousand dollars in the four months' period of inquiry. Exhibit 4 of the railroad company states that it proceeds on the assumption as indicated by the principle of the Formula that it costs no more per ton for a given terminal of a ton of intrastate freight than it does for a ton of interstate freight, and further that it costs no more for the haulage of a ton mile of intrastate freight than it does for a ton mile of interstate freight and the same assumption and process is followed in the passenger service; yet in the face of this principle and this assumption and after the revenue is diminished to compensate for the terminals outside of the state and the costs of those in the state counted the return on state business, both freight and passenger, is shown to be minus while the return on the interstate business, both freight and passenger, is shown to be compensatory.

This vagary of the Formula is due to carrying back to 1907 the mythical extra cost percentages found by the time studies, etc., in the test period of 1913, which was 15.43 per cent extra cost of state passenger, and 319.58 per cent extra cost of state freight.

19. On page 114 and going to page 122 is a repetition of pages 53-62 of the railroads first brief and pages 62-64 of the first brief are cut out and in lieu of them is a statement to the effect that the matters referred to in the discussion embrace all of the grounds of attack and that all errors discussed had been cured in Exhibit 27A, and that the matters discussed solely affected the four months' period in 1907. The statements contained in the old brief which are repeated here and which are emphasized, were completely answered from the record in the reply brief pages 29-30.

The answer is complete and contains references to the record which sustains every word of it, and instead of answering it the refuted statements are repeated and emphasized.

At page 252 there is an attempt made to answer one of the errors discussed, that was of the re-arrangement of the expenses according to the Interstate Commerce Commission Classification wherein it was contended that Mr. Hamilton carried this further than did Mr. Simson and the state was undercharged instead of overcharged; as Mr. Simson was only dealing with the assignment of expenses to the State and not dealing with their distribution under this Formula after they were set apart to the state, if Mr. Hamilton carried the calculation into the distribution within the state he did so under the Formula with its extra cost percentages, and that is but begging the question.

These same statements herein referred to are also repeated at pages 265 and 266.

20. At page 253 is an inference that the apportionment between various classes of traffic was done on the stipulated value. Again on page 271 reference is made to the stipulation value of the property devoted to the intra-state passenger business for the four years; there is no stipulation in the record as to the apportionment of the property between

passenger or freight, line or terminal; the stipulation is solely of the total value of the property in Arkansas and the various exhibits of the railroad company apportion that total value according to the workings of the formula. The stipulation does not reach to any apportionment whatsoever. (R. pp. 906-907.)

ERRORS AS TO THE VARIOUS FORMULAS.

At pages 255-261 and elsewhere throughout the new brief there are erroneous statements of the various formulas that are used by the railroads. Exhibit 23 of the railroad company makes clear the various formulas that are used. This exhibit states (R. 2050) that in preparing the reports required by the Railroad Commissions in the states the company used a formula for the allocation of revenues and expenses to the state which was uniformly followed throughout all of these years. This is the Formula which has been designated the "Douglas Formula" and is the one that Mr. Simson worked with and he prepared some of his exhibits according to it, and some of them according to the formula known as Exhibit No. I in this case. Mr. Simson as an accountant expressed the opinion that this formula was a better one than Exhibit 1, for the purpose of assigning revenue and expenses to the state. In order to present both views of the question some of his exhibits were made upon one and some made upon the other, and it was stated in each which formula was used. In addition to that formula, it is stated in said exhibit that the railroad had another formula which it used uniformly throughout all of these years for the division of expenses between freight and passenger service for the purpose of operating comparisons. This formula Mr. Simson was not dealing with because he didn't attempt to make any division between passenger and freight. In order to ascertain the condition of the road in the preceeding years the railroad company equated the results found in the test period and in some instances in the year 1913, from the Douglas formula, and the other formulas dividing between freight and passenger; therefore, the equation rests upon the application of the new formula, Exhibit No. 1, to the two old formulas heretofore referred to.

THE MATHEMATICAL DEMONSTRATION OF THE ERROR OF THE FORMULA.

At pages 60-68 of the original brief and pages 36-39 of the reply brief the facts in regard to the state's exhibits B, C, D, and E are fully set forth and in the new brief at pages 165-185 is the answer thereto of the railroad company. Exhibit A was an explanatory exhibit correcting the terminal and line units of the railroad's calculation. The present argument differs much from the original brief of the railroad at pages 134-148.

At page 165 it is said that the plaintiff's case is in no wise dependent upon the accuracy of the statements made by it in its exhibit 4 which were the basis of these exhibits of the State, but that the defendants' entire case rests upon the accuracy of these assumptions, because the State made no effort to segregate the intrastate traffic. This is a queer statement, as this attack upon the Formula is wholly independent of the many other attacks upon it.

On page 165 it is said that in arriving at the results the State considered a terminal service as being rendered by the Frisco Railroad to every ton of freight which crossed Red River either north or south bound, when the evidence unqualifiedly showed that no such service was rendered. It was said when the exhibits were filed that they contained an error due to the fact that there was not sufficient data to segregate the traffic which crossed Red River, as another Frisco corporation handled the traffic from Red River south without break in carriage. In order to show that this error was not material, Exhibits D and E were prepared, taking the entire line of the Frisco including the North Texas lines, and therefore did not contain the error which for the lack of data was in the other exhibits, which were confined to the Frisco corporation which is the party in this suit. In a later investigation by Mr. Simson, the State's accountant, he discovered the maximum extent of this error through investigation of the reports of the Texas lines to the Texas Railroad Commission and the Interstate Commerce Commission, and subtracted the expense representing the maximum amount of traffic which could have crossed Red River for the year 1913, which reduced the excessive cost from $5,751,-

142,86 to $5,368,896.45. This was fully explained in the testimony and the figures carefully examined by the railroad's accountants, and undisputed, and this matter set forth in the original brief at page 63, and yet in the face of these established facts the appellees make the statement referred to. It is said at page 170 of the new brief that the separate passenger intrastate and interstate terminal costs, in Arkansas, appearing in the plaintiff's exhibits were ascertained in careful and minute detail in the manner described; and then it is said the defendants did not question the accuracy with which these terminal costs were arrived at upon the bases described. This discussion shows that they were largely predicated upon Symons' evidence, distributing the line and terminal equipment expenses, and upon time studies which we have contended throughout were nothing but rank hearsay, and upon numerous bases under the formula which we contend are radically wrong. In the face of these contentions in the lower court and here, it is strange to understand why such a statement is made. On the same page it is stated that the contention of the plaintiff is that the allocation of expenses to terminal and line service in Arkansas has been made on sound and proper bases and is correct, and that the underlying reason of the result produced in the defendants' exhibits B, C, D and E is that the Arkansas terminal costs and line costs per unit of traffic are higher than the average of such cost for the railroad as a whole; and that the reason for this is found in the lighter density of traffic per mile of road in Arkansas, and the shorter haul in that state as compared with the average of the entire road. The most complete answer to these statements is to quote from the railroad's exhibit No. 4 (R. p. 1912): "This process assumes that the average terminal cost per ton handled in Arkansas, is closely reflective of the average cost per ton for similar service in the other states in which the St. Louis & San Francisco Railroad operates, and it further assumes that the average haulage cost per ton mile in Arkansas is closely reflective of the average haulage cost per ton mile in the other states in which the St. Louis & San Francisco Railroad operates." And again at page 3 of said Exhibit, "it is not considered that these assumptions are violent, for the reason that operating and traffic density conditions in Arkansas are thoroughly typical of such conditions upon the railroad as

a whole." Heretofore we have quoted Mr. Hamilton's testimony in support of these statements.

The railroad company gives traffic statistics of 1913, showing the density of passenger traffic in Arkansas in that year was 30 per cent less than the entire line and of the freight, 20 per cent less. Then it makes a labored argument that the density of traffic determines the unit of cost both of the terminal and line, and makes calculations reducing by 30 and 20 per cent, respectively, the expenses found by Mr. Simson in computing the operating expenses of the railroad according to the unit cost, line and terminal, as used by the railroad in exhibit 4. In other words, they take the percentage of density of traffic as the measure of the unit cost of a given state compared with the system as a whole and thereby seek to show that a lesser density in Arkansas for the year 1913 produced the excessive amount of expenses shown in Mr. Simson's exhibits over the actual expenses. It has heretofore been argued that the density of traffic does not furnish the yard stick with which to measure costs of operation; if it did so, rate litigation would be quite simple. Units of cost necessarily vary with labor conditions and with many other factors. The dense traffic in Missouri with high labor costs in St. Louis and Kansas City can easily produce higher terminal cost per ton than thin traffic in Alabama and Arkansas with cheap labor. The statement in the railroad's exhibit 4 is referring to the system as a whole, and not to it in particular states, and asserts that the conditions in Arkansas are closely reflective of the conditions in the system as a whole, and this was supported not only by Mr. Hamilton's opinion and experience, but by a special investigation he made to verify it. (See reply brief, pp. 38-39.) Finding this to be true the railroad used this unit cost, line and terminal, freight and passenger, to prorate the interstate revenue assigned to Arkansas, and that was based on allowance for terminal cost outside of Arkansas, which thereby reduced the amount assigned to Arkansas on account of the railroad having to pay this terminal cost outside of that state. If it was true for that purpose, and it made a smaller return on the whole business of the state than if a straight prorate of the interstate revenue had been made; certainly it is true, for the purpose of using this unit cost

in Arkansas to test the accuracy of the formula by applying it to the entire system, when the railroad company's exhibit and its chief accountant state that the traffic conditions in Arkansas were thoroughly typical of the conditions upon the railroad as a whole. Unfortunately for the argument made by the railroad company, that the density of traffic determines the cost, there is another exhibit put in the record by it, the accuracy of which is sworn to by Mr. Hamilton, which destroys this theory. It is exhibit 41 (Record page 2147). This gives the percentage of the entire line operating expenses assigned to Arkansas; for the four months ending December 31, 1907, the Arkansas proportion of the total expenses of the Frisco Railroad was 11.80 per cent. For the year 1913, the Arkansas proportion of the expenses of the entire line was 10.90 per cent, and for the two months test period, November and December, 1913, was 10.44. In round figures the expenses in Arkansas were one per cent more of the total expenses of the railroad in 1907 than they were in 1913. Whereas, in 1913 the density of passenger traffic in Arkansas was 30 per cent less than on the entire line and the density of the freight traffic was 19 or 20 per cent less; while in 1907 the density of freight traffic was 10 per cent less than in density on the entire line, and the passenger traffic was 19 per cent less in density than the passenger traffic on the entire line, (Record pages 884-896, and my original brief page 65). Therefore it is seen that for the year when the density of the Arkansas traffic was nearer that of the whole line, that is the year 1907, the expenses of Arkansas compared with the whole line were 1 per cent more than the year 1913 when the density of traffic, both passenger and freight was materially less than in 1907. In 1907 the freight traffic was within 10 per cent of the density of the traffic of the entire system, while in 1913 it was 20 per cent, a difference of 10 per cent in density; the passenger traffic in 1907 was within 19 per cent of the density of the passenger traffic of the entire line, but in 1913 it was 30 per cent less than the entire line, a difference of 11 per cent, and yet with this greater density in 1907, Arkansas incurred 11.80 per cent of the total expenses of the railroad; while with the lighter traffic of 1913 it only incurred 10.90 per cent of the total expenses of the road. Therefore this exhibit proves conclusively that the difference in density of traffic cannot

account for the excessive costs built up by using the units found under the provisions of the formula, as the line and terminal costs in Arkansas when applied to the whole system. In other words, density of traffic does not measure the cost of operation. That it has an effect upon it no one questions, but that it is a measure of it is a position wholly untenable, and not supported by any evidence, not heard of before in any rate cases and at war with well known operating conditions. According to the theory of the new brief and the calculations worked out to outset these exhibits, the operating expenses assigned to Arkansas in 1913 ought to be greater by 10 per cent than in 1907, whereas in fact they are 1 per cent less.

On pages 178-179 is again contained the statement of the first brief that the terminal costs in St. Louis referred to by Mr. Hamilton were of less than carload freight; this statement was refuted by quoting in full Mr. Hamiltons testimony upon that subject at pages 38-39 of the reply brief.

It is contended at page 179 that the statements in Exhibit 4, and Mr. Hamilton's testimony supporting them cannot change the facts. It has not yet been shown that they were not true. Mr. Hamilton merely made an argument in his rebuttal testimony on the general effect of density of traffic, and gave a few illustrations of terminal expenses at certain towns in Arkansas, but this was not answering the proposition relied upon by the railroad company in computing the cost of terminal expenses outside of Arkansas and sustained as true by Mr. Hamilton's testimony and his investigations.

Next it is attempted to answer the force of the calculations in exhibits B, C. D and E by asserting that the short haul in Arkansas incurs more terminal costs than the long haul. The hauls in other states are not in evidence, but there is no reason to believe, so far as this record goes, that they are longer than they are in Arkansas. This calculation is not dependent upon the length of the haul, so it doesn't enter into the subject at all. The tests made to carry out the provisions of the Formula purport to count all the line expenses, and all of the terminal expenses, no matter where incurred, of every kind, character and description, and put them down, and it matters not what caused them, short haul or what not. Mr. Hamilton testified that the tests accu-

rately counted up all of the terminal costs in Arkansas, and all of the line costs in Arkansas, and accurately set them down. The total sums of each are made up according to the theory of the formula for each service rendered, and it makes no difference whether that service was rendered on a long haul or a short haul, since the expense was incurred and is set down either on the line side or the terminal side. This matter is explained fully in Mr. Simson's testimony. While it doesn't need any explanation, yet as constant iteration of the fallacy may have some effect it is well to have the point clearly brought out and this quotation from Mr. Simson's testimony is a complete answer to it (Record pp. 898-899):

"Q. As I understand this formula, and the testimony of Mr. Hamilton and Mr. Nay in explaining it, they have gathered up those terminal costs everywhere that they touched, not only at the yards and the stations, but everywhere else that an expense occurs which is terminal in its nature; that is originating and delivering freight and its incident they have gathered up into the total terminal costs. That is the way you understand it, is it not?

"A. Yes, sir.

"Q. When those elements of expense, either what they made and occurring at any place on the line of the railroad which from their nature are properly attributable to terminal, are segregated from the line and are set up as terminal costs, has that expense any relation whatsoever to the haulage of the freight that moves between any given terminal?

"A. As a general matter of transportation it is one department of it. As a matter of determining the amount of the haulage costs, no.

"Q. Of course, it would make a big difference to the railroad how far that freight is hauled and how that expense is spread over the results of the revenue, I presume, will it not?

"A. Yes. The haulage has to absorb the terminal cost because the rate is for transportation between the two points, which includes the terminal expense.

"Q. That is a separate proposition, though, entirely, from what you based your exhibits upon, is it not?

"A. Yes, sir.

"Q. I have written down hastily a little rough example here and I want to see if that meets the situation here: Suppose a ton of freight moves 25 miles and has two terminals, of course with a cost of 31 cents for each: That would be a total terminal cost of 62 cents. This haulage cost is approximately 4½ mills, is it not?

"A. Yes, 4.65.

Q. Call it 4½, for each mile: For 25 miles that would make 12 cents haulage cost, or a total of 74 cents as the expenses on that ton of freight. Suppose the rate for the haul of that ton was $1.00, or rather, the revenue ton rate was $1.00, that would give a profit of 26 cents over the operating expenses?

"A. Yes, sir.

"Q. Suppose that freight was hauled 100 miles. For the same ton of freight, or a silimar ton of freight, your terminal costs would be 31 cents at each end, or 62 cents; the haulage cost would be 45 cents ,or a total of $1.07. If the revenue was the same you would lose 7 cents on that, but as a general proposition the rate increases with the distance, but not in proportion to the distance, and we will assume, say, that the rate on that would be $2.00, although the haul was four times as long. That would leave a profit of 93 cents on that particular shipment?

"A. Yes, sir.

"Q. Does that example illustrate the relation of terminal and haulage cost, and the revenue that is involved in it?

"A. Yes, exactly.

"Q. Then how can the long or short haul enter into this question of terminal cost at all if this example were illustrative?

"A. There is no necessary relation between haulage and terminals. The only place where the length of the haul enters into it is that the haul must eventually, through the revenue, absorb or compensate for the terminal expense. The rates are built to cover the transportation between the two points, which includes the terminal expense.

"Q. If the rate does not absorb it and the haulage cost they lose money?

"A. Yes, sir.

"Q. If it does absorb it it is profit and they make money?

"A. Yes, sir."

It is said at page 185 that the defendants had ample opportunity to investigate and did investigate the Arkansas line and terminal expenses and could find no fault therein. They certainly did find some fault with Mr. Symons, who entered largely in making up these expenses; they found some fault with the time studies, which represent at least 50 per cent of it, and they found some fault with this formula which attempts to run an arbitrary line between all expenses most of which are not susceptible of such division, and by so doing they accumulated a tremendous terminal expense, and correspondingly resulting in the so-called extra cost of state business. There was no better way to test out the formula than by a mathematical demonstration of its application according to the railroad's own statement of the facts. A primary question for consideration in a rate case is what the road is doing as a whole. When this is ascertained, then the work of separating the business between the state and interstate traffic follows. If it is found that one part of the traffic is profitable, and the other unprofitable, it may be worked out from such facts, whether the interstate rates are too high or too low, and whether the state rates are too high or too low, or both may be too high or both too low. In this case the railroad assigned all of the state revenue easily to the state, because that automatically attaches to the state in which it arises; the interstate revenue is made up of revenue derived from passengers and freight part of whose haul is within the given state. Much of it, in the case of the Frisco, was business passing through a corner of the state, trans-state business. In order to properly assign this revenue to the state as the railroad said it should be assigned, there was worked out a system of equivalent mileage to compensate for the expenses of the terminals outside of the state, by translating these expenses into haulage expenses and adding a constructive haul to the actual haul; in that way the actual revenue which was due to the State, after paying the expenses of the outside terminals, was assigned to the state. In order to do this the terminal and line costs

outside of the state must be ascertained. By actual test the railroad only ascertained these in Arkansas, and the railroad asserted that those units of cost ascertained in Arkansas were closely reflective of those throughout the system, as density of traffic and operating conditions in Arkansas were typical of the system as a whole. This was supported by the testimony of Mr. Hamilton to the same effect and also by investigation made by him to confirm his opinion. Mr. Nay testified that if this was true then application of the unit costs, line and terminal, to the entire traffic of the road would produce the actual operating expenses; of course this is but another way of saying 2 and 2 added together make 4. Having the sanction of such a great accountant as Mr. Nay that the actual operating expenses could be found in this way, Mr. Simson applied these cost units to the actual traffic of the railroad, and found as shown in these exhibits an excess of approximately $5,000,000.00 a year more than the actual operating expenses; from the railroad Exhibit 4 and Mr. Hamilton's and Mr. Nay's testimony it should have been actually the same. This necessarily means that the unit costs worked out in Arkansas are excessive or else that the unit costs in Arkansas are actually more than upon the entire system. If the second alternative is true then the assignment of interstate revenue to Arkansas is wrong and it should to the extent of the error in these costs units applied to the system, be more than it is, and the return upon the whole business in the state should be more than shown in the railroads exhibits, and still greater after the corrections made by the defendants' exhibits of the errors in the plaintiff's. If the first alternative is true and the costs worked out under this formula are excessive, at the rate of $5,000,000.00 per year, it demonstrates mathematically that the processes of the formula are wrong. This is the real truth of the case. There is no reason shown in the testimony to destroy the force of the statements in exhibit 4, and the testimony of Mr. Hamilton in support thereof. The statistics in exhibit 41 show that density of traffic does not measure operating expenses. When the density of traffic was only 10 per cent in Arkansas, less than the entire system, on freight, and 19 per cent less on passenger, Arkansas' proportion of the entire expenses is 11.80 per cent of the whole, but when the density of traffic is 20 per cent and 30 per cent less, respec-

tively, the proportion of expenses incurred in Arkansas to the entire system is only 10.90 per cent for the year; and for the test months, 10.44 per cent.

The railroad's only answer to these exhibits is to stulify their previous exhibits and Mr. Hamilton's testimony and it has failed to do so.

The acid test was put to the railroads' statements in Exhibit 4, and the terminal costs and line costs as worked out under this formula, and the acid destroyed the formula.

ENGINE TON MILE.

At Pages 124-125 of the new brief an extract is given from Wellington's work on "The Economic Theory of the Location of Railways." Heretofore this work of Wellington's has been much derided by the railroads, as antiquated; the substance of this statement is that the locomotive causes a far greater portion of the wear, how much is not positively known, but it is asserted from one half to three-fourths. Mr. Hamilton stated that the maintenance of way expenses were caused chiefly from elemental causes, and that the cost of maintenance due to the train using the track, was variously estimated from 10 to 25 per cent, (Record page 109-110), therefore, according to this theory the engine represents one half of 10 per cent of the expenses or one half of 25 per cent of the expense. The engine, therefore, does represent something, but the engine ton mile does not, it is like a Confederate note, "Representing nothing on God's earth now, and naught in the waters below it." It is the weight of the engine multiplied by the miles it runs, and a passenger engine hauling five or six cars, and a freight engine hauling forty cars over the same division, one at the rate of 40 miles an hour, and the other at the rate of 10 miles an hour, if the engines are of the same weight, will make exactly the same engine ton miles. It does not represent the speed of the train, weight of the train, service rendered, in fact, nothing except a fortunate percentage (for the railroads), against passenger service. Exhibit 40 shows that of the passenger business 43.77 per cent is state, while of the freight business, only 3.65 per cent is state. At page 131 is a quotation from Mr. Symons on tractive power. He

says starting at a speed of five miles per hour, the engine has a net tractive power of 23,000 pounds, while at 40 miles per hour the engine has a net tractive power of only 11,000 pounds. The engine ton mile, therefore, disregarding speed does not represent tractive power. Mr. Hamilton and Mr. Nay said it represented the load behind the engine, but Mr. Mayer's exhibit C C explodes that theory completely. This exhibit is summarized at page 80 of my original brief and shows actual conditions on the 'Frisco road. A few illustrations explain it. During the four months of 1907 the east bound freight trains carried from 75 to 97 per cent of their rating, while the west bound carried from 42 to 88 per cent of the rating; yet exactly the same engine ton miles was made whether the train was loaded 97 per cent of the engine rating or only 42 per cent. This engine ton mile of the freight trains was set up against the engine ton mile of the passenger trains, which service is fairly constant, but even there, are factors rendering it useless for comparative purposes. To illustrate, train No. 4, from Fort Smith to Monett, a distance of 134 miles, carries six cars and makes 804 car miles while its companion train in the opposite direction carries seven cars and makes 938 miles each trip, and the engines being the same, and mileage the same, the engine ton miles are identical. Many other illustrations of its operation are found, (Record page 559-560). These are established facts and Mr. Mayer testified from the records, and whatever criticism Counsel may level against Mr. Mayer's opinions, his exhibits and statistics, after the most searching scrutiny, were unattacked and stand established.

The emphatic repudiation of the engine ton mile basis, by the Interstate Commerce Commission, has driven the appellees into showing that other bases produced substantially the same result, and they make various comparisons with other bases. First they take up a report of a committee of the American Railway Engineering Association, which recommended the equivalent ton mile. This body is not likely to get out a report harmful to the railroads. Mr. Mayer also offered in the course of that discussion a minority report from that Committee, submitting a different basis, neither of these reports were acted upon by the Association, and no witness testified sustaining either. No value can be attached to these tentative individual theories. Next is an attempt

to resuscitate the train mile basis; the Interstate Commerce Commission rejected it along with the engine ton mile basis. At page 136 it is stated: "On the authority of Judge Hill's brief in the first Arkansas Rate Case, Page 81, the revenue train mile was the basis used by the Union Pacific Railway Company in the apportionment of maintenance of way expenses, in the case of Smythe vs. Ames 169, U. S. 466." In the brief referred to is a summary of the testimony of Mr. Randall of the Burlington & Missouri Railroad and Mr. Van Kuran of the Union Pacific. Mr. Randall stated that no accurate apportionment could be made between freight and passenger of the maintenance of way expenses, and on the experience of railroad men, he divided it 70 per cent freight and 30 per cent passenger; and Mr. Van Kuran said, that he divided it on the train mile basis, producing 70 per cent freight and 30 per cent passenger. As the percentages reached, one from an estimate and the other from train miles, were such as are generally accepted by railroad men as the true relation between freight and passenger, this percentage between freight and passenger was not a subject of controversy. In this case the engine ton mile and the train mile produce practically 50 per cent each to freight and passenger. On page 137 it is said, "The revenue train mile was used in the first Arkansas Rate Case by the carriers, and was accepted and used by the state." In the brief of the Counsel for the state referred to, in this Court on pages 261-281 is an argument against the train mile basis and it is stated that the railroads had used it, and the state only began its work from that apportionment, but it never accepted it as correct; and the argument in the brief was to prove that it was radically wrong, and unfairly burdensome to the state. This statement is outside of the record, but is on parity with many of the statements regarding matters in the record. On pages 137-138 it is said that perhaps the most terse and concise statement for the reason for the use of the train mile basis for the apportionment of these expenses is found in the evidence of Mr. Ludlam, one of the State's experts in the first Arkansas case. A quotation from his testimony is given; it is to the effect that the maintenance of way expenses should be distributed against the use which is made of the way which is in running trains. It is not stated in the excerpt the manner in which apportionment should be made against the train. Mr. Ludlam was testifying in sup-

port of a formula which apportioned this expense between local and through freight trains on the car mile basis and on the passenger side between Pullman, coaches, baggage and express and mail cars on the space used by each. These expenses may be apportioned against the trains in many ways: It is contended here by Mr. Nay and Mr. Hamilton that the engine ton mile apportioned it against the train. It may be apportioned as it was in the West Virginia Case on the engine miles. It may be apportioned as it was in the Arkansas case on the car miles, or it may be apportioned as is done in this case, for part of the expenses on the car foot mile; or it may be apportioned as was done by the Interstate Commerce Commission on the basis of direct charges of certain accounts reflective of its use by the trains. Each of these bases more or less directly apportions it to the train, and the question is which is the true factor. There is absolutely nothing in Mr. Ludlam's statement that indicates support of the train mile as that factor.

Next is the comparison with the engine basis used in the West Virginia case. As most of the freight of the Norfolk & Western railroad was hauled by two engines, this basis was used and apparently acquiesced in. There is no evidence of double headers on freight trains, on the 'Frisco road in Arkansas. In the West Virginia case where the freight trains usually had two engines, the relation was approximately the same between freight and passenger, as in this case, where the freight trains do not have double-headers. Such result conclusively proves that a basis on a road using single locomotives for the freight trains which produces the same results as another basis on a road using two locomotives—especially if it be true that locomotives did one half the damage—is manifestly the wrong basis. Next, is a comparison with a tentative basis suggested by some employee of the Interstate Commerce Commission introduced by Mr. Mayer in his discussion of the subject, as exhibit D. This basis was not approved by Mr. Mayer or anyone else and since the Interstate Commerce Commission has adopted another basis, no value can attach to this one.

Next is a comparison with the basis adopted, at least till a better one is found, by the Interstate Commerce Commission, called the direct charge basis, wherein accounts 80 to 89 are used as the basis of apportionment. It is not considered necessary to attempt to answer the argument

against this basis made by the Appellees. The report of the case where this basis was adopted shows that one of the learned Counsel for the Railroad in this case was Counsel for the Santa Fe railroad, supporting the engine ton mile as the basis in that case. Therefore, it is apparent that this argument has been weighed and found wanting by the Commission. A comparison of the result of the two bases shown on page 150 is called to your attention. This was made by finding the percentage of increase of the intrastate freight and the percentage of decrease assigned to the Intra-state passenger, and applying these percentages to the fiscal year 1913, using the statistics in Exhibit 61. This increases expense assigned to state freight by $2,118.16, and decreases the amount assigned to state passenger $14,989.46. The methods of assignment to the state freight and state passenger, under the provisions of the formula uses the alleged extra cost percentages of 15.43 per cent against the state passenger and 319.58 per cent. against the state freight. The engine ton mile basis is one of the factors helping to produce this extra cost percentage against the state traffic. The provisions of the formula working to this result include the division between line and terminal, the time studies, based on hearsay testimony, the equipment repairs division between line and terminal based on Symons' evidence, and many other incongruities and errors referred to in the briefs of the state. It is impossible without recasting all of the exhibits to trace the extent of the error of using the engine ton mile as the basis for dividing each item of expenses, because each apportionment is used over and over again in the formula, and all of the expense of superintendence are apportioned on the basis of the expenses already located and the general expenses are apportioned the same way, and in many instances other accounts are assigned on preceeding accounts, including the previous errors. Messrs. Haskins and Sells have prepared a calculation simply substituting the direct charge basis for the engine ton mile basis, but not carried out throughout the formula. It is as follows:

Comparison of Engine Ton Mile Basis and Direct Charge Basis for Division of Common Expenses of Maintenance of Way for Two Months of November and December, 1913:

	Engine Ton Mile As Shown in Exhibit 17	Direct Charge Basis
Freight—		
State	$ 51,487.55	$ 52,287.82
Interstate	303,012.94	319,859.38
Passenger—		
State	68,063.26	62,781.09
Interstate	86,626.01	77,847.72
Mail and Express	35,189.07	31,602.82
	$544,378.83	$544,378.83

This shows that the freight expenses are increased $17,646.71 for the two months' period, or at the rate of $105,880.26 per annum. According to Exhibit 40 the state freight bears 3.89 per cent of the increase. The statement shows that the passenger expenses decreased for the said two months $14,060.46, or at the rate of $84,362.76 per annum, and according to Exhibit 40, the state passenger business receives 40.55 per cent of this decrease. When this change is carried into all of the accounts, Superintendence, general expenses, and other assigned charges using this basis, it will be much magnified. The Interstate Commerce Commission has not finally accepted the direct charge basis, but indicated that the data used by it was insufficient to make a complete basis, but adopted it as preferable to the engine ton mile and the train mile, or any other basis suggested in that hearing. So far no basis has been found that will separate these expenses in such a way that the Court will be convinced that it is done with a fair degree of accuracy, and that the margin of error is insufficient to be ignored; certainly the most approved basis at this times is the direct charge used by the Interstate Commerce Commission, and the use of it is sufficient to demonstrate that the error of the engine ton mile is sufficiently great to upset all of the exhibits made by the railroad in this case, and leave the Court without sufficient data upon which to base a charge of confiscation, even if all the other provisions of the Formula should be accepted.

THE AVERAGING EXHIBITS.

The exhibits of the state from H 1, to Z 1, consecutively, work out processes of averaging the conditions of the road during a series of years, and show an average condition for the period of inquiry of 1907, instead of testing the condition of the road by a four months' period in 1907, worked up through a test period of two months in 1913. These exhibits present the process from several view points, some using the old formula, and some the new. Pages 31-35 of the original brief gives a full statement of them, and pages 185-196 of the new brief is the railroad's response thereto, and your attention is invited to it. The first point of attack is, that the rates prevailing in 1907 did not prevail in the subsequent years, but in lieu thereof, there was a 3 cent passenger rate for part of the time and a 2½ cent passenger rate for part of the time and the Court tariff in lieu of the Commission tariff for the freight rates. In Exhibit 61 the railroad diminishes the actual return during these years by applying the enjoined rates to the traffic which actually moved during these years, on the theory that exactly the same traffic, both freight and passenger, would have moved under the enjoined rates which did move under the existing rates, no more, no less. Heretofore, this subject has been discussed at some length at pages 38-41 of the original brief and at pages 32-33 of the reply brief, and it will not be repeated. Suffice to say that the theory that exactly the same traffic would move on higher rates, and no more, which moves under lower rates, is inherently unsound, but for the purpose of this case it is not necessary to consider that question, because Mr. Simson made calculations on the results shown in Exhibits A A. and B B., which are income accounts of the road for the year 1913, after making corrections as shown in his various exhibits correcting errors in the railroad's exhibits, and basing one upon the old Formula and the other upon the new Formula. These exhibits show a return on all of the business in Arkansas under one Formula of 7.69 per cent. and under the other Formula of eight per cent. The railroad counsel called his attention to the diminution of the revenue as shown in Exhibit 61, by applying the enjoined rates in lieu of the existing rates, which produced the revenue shown, and he was asked to make a calculation showing the effect

by so applying the enjoined rates to the traffic moving under the rates existing during the several periods in these exhibits. The result of that calculation reduced the return under the one exhibit from 7.69 per cent to 6.9 per cent and under the other exhibit from eight per cent to 7.23 per cent. It must be borne in mind that these figures were dealing with the figures as made by the railroad company, except the corrections made by Mr. Simson, and before the averaging process was applied to any of the periods. Therefore, it is seen that the deduction of the revenue by applying the enjoined rates would have no material bearing on this case. The next attack on these exhibits is for not averaging as part of the operating expenses, taxes, rentals and hire of equipment, and also for not averaging property values. The Interstate Commerce Commission does not classify taxes, rentals and hire of equipment as operating expenses, and for that reason, presumably, the railroad company in its equating process carrying back the statistics discovered through time studies, of the test for the two months of 1913, to the four months of 1907, and intervening years, did not equate these items, but used the actual items of these accounts in each period to which the equation was carried. Mr. Simson's exhibits proceeded on the same plan and should have been made upon some plan as they were prepared so as to compare the one with the other, as well as to show the normal condition of the road through the series of years. When his attention was called to this, Mr. Simson said the hire of equipment, while not technically an operating expense, was so closely analagous to it, that it also should be equated or averaged, and he made a calculation including it in his averages, and the percentages of returns shown in his exhibits were not changed. Taxes and property values are not the subject of average or equation; Mr. Simson impolitely stated that such a theory was absurd. The property value for each year is fixed and when the return on that value is calculated it accounts for every dollar of the investment after paying the taxes, and rentals and hire of equipment, which is deducted before the return is made; and that return shows whether the investment is making a compensatory or a confiscatory income. Suppose, at the beginning of a series of years the property value was $10,000,000; after paying the operating expenses, rentals, taxes, and hire of equipment, the sum of $600,000 would be required as net

income to produce a six per cent return on the property value. Suppose at the end of the period the property value was 20 million dollars, then, after paying operating expenses, rentals, taxes and hire of equipment, it would require a net income of $1,200,000 to produce a six per cent return on the property. Suppose for each of these years, whether the property was ten millions or twenty millions, and the taxes a quarter of a million or a half a million, the net income produced over a six per cent return on the value of the property, that would demonstrate that the road was earning a compensatory return on its investment after all deductions had been made for taxes, rentals, hire of equipment, and operating expenses, and the net income applied to the investment. The averaging of the property values in the illustration made would require in the beginning of the period the earning of a return far more than adequate to pay a compensatory return on the actual value, while at the end of the period it would permit a return to be shown that was apparently compensatory, although inadequate to pay a compensatory return on the present value of the property. The next attack on these exhibits is stated at page 188, as follows: "The process applied by the defendant in determining the substitute revenues and the expenses, and the result secured thereunder are meaningless and misleading, for the rason that average conditions in respect to revenues and expenses on the entire line in any one year are not reflective of the conditions in Arkansas during that year, much less are the conditions, in respect to revenue and expenses on the entire line representing an average of five years, reflective of conditions in Arkansas during the four months ending December 31, 1907, which is the underlying principle of defendants' theory." When the railroad company began the introduction of testimony of the test months of 1913—as applicable to the conditions in 1907, the state objected. Mr. Hamilton testified that he had in the course of preparation exhibits to prove the similarity of the periods, and the Court on that statement let in the offered evidence. Before the exhibits referred to were introduced the appellees questioned Mr. Nay as to what similarity in operating conditions would justify the use of statistics of one period to determine the conditions in another. He gave six tests to determnie whether the conditions of one period were sufficiently similar to the conditions in another period to be used; and the

sixth tests stated by him at page 442, is the assigned expenses in proportion to the traffic, that is the proportion of Arkansas' expense of the total of the road. Subsequently Mr. Hamilton introduced these normality exhibits purporting to meet the tests prescribed by Mr. Nay. Exhibit 36 shows the ratio of Arkansas' earnings of the entire line, also earnings for the different periods, and exhibit 40 and 41 shows the Arkansas proportion of operating expenses and traffic compared with the entire line for the different periods. This theory of Mr. Nay and these exhibits of Mr. Hamilton were largely the basis of Mr. Simson's work and now, it is stated that such statistics of earnings and expenses of the entire line are not reflective of conditions in Arkansas during the year. Verily the Appellees are kept busy in brief and rebuttal testimony refuting their testimony in chief.

THE TRAFFIC EXPENSES.

At pages 196-197 is an answer to the reply brief on this subject, it is asserted that because the interstate passenger haul is double the state passenger haul and the interstate freight haul three times the state freight haul that the traffic expenses are apportioned, in the one instance double and in the other instance treble against the interstate, and therefore the state should not complain. The point made is that a great volume of these expenses are outside agencies, like in New York, Philadelphia, and other cities, and expenses incurred in advertising the road. Surely such expenses cannot possibly be of use to the short haul intrastate traffic, but are incurred wholly for the purpose of obtaining the interstate traffic, which should be charged with such expenses. At page 197 again, Appellees go outside of the record to get support from the Arkansas Formula, but again make erroneous statements in regard thereto. It is said that the amount charged the state in this case was less than was charged in the Iron Mountain case, and on the "basis employed and approved by the state." In that case the basis employed by the railroads was the revenue basis and when the state made its Formula, as testified by the author of it, he was unable to obtain data to separate the traffic ex-expenses between state and interstate, as it should be done,

and without such data he used the division made by the railroad company, which he most heartily disapproved as inherently wrong for reasons explained by him. In the brief of the state in that case in this Court, (at pages 347, 405), this is shown.

STIMULATION OF TRAFFIC.

At page 219 of the new brief is a chapter on stimulation of traffic. This subject has heretofore been discussed at pages 38-43 of the original brief, and at pages 32, 33 of the reply brief and only this additional thought will be added to what has heretofore been said. Exhibit 42 of the railroad company selected certain border towns and certain interior cities comparing the result of the two cent and the three cent passenger rate, for the purpose of showing that at border towns there was an unnatural stimulation of traffic, by re-buying for the purpose of securing the lower state rate, while at the interior points, sufficiently removed from the border, there was no incentive to the passengers reticketing there. These interior towns, and in most instances shown to be large towns, there was an increase of 28 to 33 per cent. during the two cent period over the three cent period, and Mr. Hamilton testified as stated in the appellee's brief at pages 221, that there was an increase in the intrastate passenger miles of 21 per cent and a falling off of interstate passenger revenue 14 per cent. These statistics conclusively prove that the traffic was stimulated by the two cent rate, the passenger miles increasing 21 per cent and a falling off of only 14 per cent. in revenue; and in the interior towns too far removed from the border to be affected by the rebuying proposition, the stimulus was from 28 to 33 per cent or almost equal to the percentage of decrease in the rate. Therefore, it is apparent that the diminution tables, which assume that the same amount of traffic moves, and no more, under the two cent, that does move under the three cent rate, is contradicted by the established facts put into the record by the railroad. It is another case of arguing against its own testimony.

THE SO-CALLED SIMSON PERCENTAGES OF EQUIPMENT REPAIRS BETWEEN LINE AND TERMINAL.

At pages 151-161 of the new brief is a chapter on the apportionment of the equipment repairs, between line and terminal service, and it is an effort to make it appear that Mr. Simson, the accountant of the state, had prepared a basis for this apportionment, and contrasting his basis with the general managers' averages, supported by Symon's testimony. The whole argument is so misleading that it is thought that a statement of the facts would be useful. Mr. Simson introduced Exhibit F. and thus explained it:

"A. I had some curiosity to know how a distribution of maintenance of equipment repair items for locomotives, passenger cars, and freight and work equipment, compared with the Berry tables as shown in the proceedings of the Fifth Annual Convention of the American Railway Engineering and Maintenance of Way Association held in Chicago, March 15 to 17, 1904. I do not pretend to sustain the tables from any technical knowledge of engineering matters.

"I have taken those tables, and, as near, as the information there given would permit—and I think it is fairly close—have assigned to line and terminal the percentages of the maintenance, following the definition of line and terminal as given in the formula, Exhibit No. 1.

"I have in this exhibit quoted the full tables as shown in Mr. Berry's table. On page 2 of Exhibit F, I have shown the assignment of these percentages, which represent distribution of contributing causes, to line and terminal according to the best definition I could make of the terms employed. Time and exposure being applicable to both line and terminal has been apportioned between the two upon the basis of the percentages previously assigned; in other words, an overhead method, if you please. Again, on page 607 this occurred:

"Q. The next item that Berry has in his table is starting and stopping: How do you classify that, as line or terminal"?

A. "As terminal."

Q. "Is that entirely accurate?"

A. "No, there is starting and stopping for water, for coal, for passing, for train orders, and things of that sort, so that a part of that really should have been assigned to line, but I couldn't divide it."

Q. "The greater part of it, or a very large part of it, I presume you consider terminal?"

A. "In accordance with the definition of terminal in Exhibit No. 1."

Q. "So you assigned all of that to terminal, not being able to work out what part of that should go to line?"

A. "Yes, sir."

Then he takes up the difference in the figures of the two months' test period, November and December, 1913, of the assignments between the two tables, and shows that the Company's method produced an excessive amount to terminal over the Berry table method of $15,386.47, or twenty four and one-half percent. This is at the rate of $92,318.76 per annum. Mr. Simson was cross examined exhaustively with regard to this table; his cross examination on this subject begins at page 754, and continues to page 776. He stated over and over again as he had first stated in his direct examination, that he had no technical knowledge upon this subject whatsoever, did not purport to have, and that he had merely as an accountant, taken the Berry table and adapted it to the line and terminal division, so far as he could, as line and terminal was defined in the Formula. He stated time and again, that neither the Berry table nor the Wellington table showed any consideration of line and terminal as defined in the Formula, and gave him no indication as to how either Berry or Wellington, would have divided it, and that he was merely adapting the definitions of the Formula to this table. He stated several times that he did not have the data to make a complete separation between line and terminal as defined in the Formula. Sixteen per cent of the contributing causes of the Berry table was due to switching, Mr. Simson assigned all of that to terminal; of that he said that a material part would be due to line under the Formula, as switching in classification yards was defined therein as line. Twenty per cent of the contributing causes of freight car repairs was caused by starting and stopping, and all

of that was assigned to terminal; of that Mr. Simson said, a material part of it would be line under the Formula, on account of the stops, for water, fuel, passing trains, orders, etc., but there was no data to separate it and as he thought the major part of it was due to terminal he assigned it all to terminal, in the absence of other data. At page 774 he said:

"The sole value of the exhibit is a comparison of the results, the Berry table results being produced upon a consistent and like basis."

In face of this testimony and the only testimony on the subject, that this was a mere table to make a comparison, stated to be inaccurate, but of some value as indicating the difference in results between the two tables, appelleees have treated this table of Mr. Simson as a basis for an apportionment of equipment repairs between line and terminal, and made calculations on that theory. At page 160 is a statement showing the result of applying the so-called Simson basis in lieu of the basis of the companies' exhibits, and it shows a reduction of the deficit in state business from $30,-815.08 to $17,857.73. This is of course under the processes of the Formula applying the extra cost of 15.43 per cent passenger, and 319.58 per cent freight, of the state business and of course, contain all of the errors of engine ton mile, time studies, and excessive accumulation of expenses to terminals. Mr. Simson didn't offer this comparative table as a basis to divide equipment repairs, his testimony plainly so states, and yet the appellees are seriously treating it as if it were a basis presented by the state, for this purpose. The state has contended throughout that there could be no division as made in this Formula, between line and terminal, especially in regard to the equipment repairs, and to distort this comparative table into such a basis is totally without any foundation in the record. The table was prepared merely for the purpose of showing that even when many of the large items were wholly assigned to terminal, which did not apply wholly to terminal, yet by a process so favorable to the railroad a reduction in terminal expenses of $92,000.00 per annum was shown from the table used by the company. It was just another method of showing by collateral evidence the excessive apportionment of terminal expenses through the company's methods.

THE STATE'S EXHIBITS Q, R, S, T, U, V, W, AND X.

The consideration of these exhibits in the new brief, pages 225-232, is largely repetition of argument heretofore made, and incorrect statements of their purport and effect. I cannot discuss them without repeating what has been said heretofore. At pages 25 to 30 of the original brief of the state, these exhibits and their purport is set forth, with record references to support the statements therein made. And in the reply brief at page 29, are also statements with record references, as to the purport of some of them discussed here. It is confidently submitted that the statements in the original brief and the reply brief are absolutely accurate statements from the record.

EXHIBIT Y.

Beginning at page 232 is a repetition of the statements in the railroad's former brief beginning at page 160. Attention is called to the answer to that at page 39-40 of the reply brief.

EXHIBITS AA AND BB.

Appellee's discussion of these exhibits at pages 234 to 236 is a repetition of pages 162-165 of the old brief. At page 235 is the statement that the defendants contend they show the return upon the entire business in Arkansas, of every class and character combined, including both intrastate and interstate, under the 3 cent passenger fare, state and interstate, and freight rates, state and interstate. The purpose of course of these exhibits was to show the return upon the entire business in the state, under the existing rates, but on the request of the railroad company Mr. Simson made a calculation showing just what the returns would be under both of these exhibits, if the railroad's theory of applying the diminution tables was applied. This testimony is given at pages 752-753 of the record and shows that the return on the property in Arkansas, by diminishing the revenue by applying the Commission's freight rate, and 2-cent passenger rate to the traffic which actually moved in Arkansas in 1913, would have been 6.9 per cent under Exhibit AA, and 7.23 per cent under exhibit BB.

ERRORS IN ASSIGNMENT OF OPERATING EXPENSES TO ARKANSAS.

Beginning at page 265 is an argument to the effect that all errors in assignment of operating expenses to Arkansas were eliminated, except an error of $23,050.62, shown in defendant's exhibit G. This is an erroneous statement as demonstrated in the reply brief at page 29-30. There is an effort made in this argument to show how little this particular error affects the intrastate business. That is reasoning in a circle because the effect of the intrastate business is determined by the processes of the formula, involving the extra cost to state passenger of 15.43 per cent, and 319.58 per cent extra cost expenses to the state freight. In following chapters other errors in the assignment of operating expenses to the state will be discussed.

LINE AND TERMINAL.

The Impossibility of Dividing Expenses Between Line and Terminal.

So much is said in the new brief commendatory of the line and terminal distinction, that it is thought it can best be answered by a comprehensive consideration of the subject.

The evidence in this case discloses practically every phase of railroad operation. From that testimony these facts can well be deduced:

There are certain natural classifications of expenses, or, to put it in another way, certain expenses that automatically classify themselves. For instance, the expense of a freight train and the expense of a passenger train will automatically attach to the service rendered. The expense incident to the death of a passenger or the injury to a passenger will automatically attach as he is a state or an interstate passenger, determinable by his ticket; also, the injury or loss of freight will automatically attach to state or interstate according to the way bill of the freight lost or destroyed or damaged. There are certain other expenses which will naturally or automatically locate themselves to different lines of service,

such as station expenses and train expenses, as each are distinct services, and they arise from a body of employees working in different lines and under different superintendence. There may be some little crossing of lines in this service, but if so it is negligible and these services classify themselves, and the expense incident to them likewise classifies itself as falling to the particular class of service in which it originated. Likewise the yard expense is a distinct and separate expense. The service is performed by a different organization than that of either the train service or of the station service. It is a different class of work, distinctive in all respects unto itself. Out of it or into it will go all the activities of the train service, but when the line of the yard is crossed, a different class of service begins. For instance, a road locomotive engineer turns his engine over to a hostler as soon as he enters the yard, his service ends and the hostler's begin. There are other classes of expenses that are impossible of separation because they are in each and every class of railroad service, such as the General Expenses, typified in the salary of the president. His duties are supposed to reach either directly or indirectly into every ramification of railroad work. There are Traffic expenses, which are in a sense somewhat like General Expenses, some of them being distinctively freight and some distinctively passenger. Such as are distinctively of one class or another automatically allocate themselves, such as passenger agents or freight agents, whose duties consist in soliciting passenger or freight traffic respectively, but the great mass of this expense is an expense to obtain business for the road generally, to advertise its attractiveness, and the resources of its territory, in maintaining offices for the accommodation of its patrons, passenger or freight, state or interstate.

The Way is kept for all purposes of the railroad, passenger and freight, state and interstate. The business of the road is ultimately transacted on the Way; the work of the traffic officers, the general officers, the station forces, the yard forces, is all, in its last analysis, to obtain business to transport over the Way. The Way is essentially common to every phase of railroad operation.

Take these three items of expense, General Expenses, Traffic Expenses and Maintenance of the Way, and you have

a mass of expense that is insusceptible of division between Line and Terminal because there is no Line or Terminal work done by anyone in any of these three departments. To separate the expense of the Way, the expense of Traffic and the General Expense into Line and Terminal expenses, is to create an artificial distinction where none exists. Every piece of freight and every passenger has somewhere two terminals and each piece of freight and each passenger is transported over more or less of the line, but the expense of both of these terminals and the expense of the line service, using these terms as defined in the Formula, are so interwoven that they cannot be separated and should not be separated because they are not incurred separately as such for either. Take the president's services as an illustration and as typifying general expenses; he gives no attention to the origin or destination of freight in itself; he gives attention to the general operation of the road and this is but an incident to it. The roadbed is used for both line and terminal service and no one can draw a mark between parts of it used for one and parts used for the other. It is true that at stations certain portions may be set aside where freight or passengers originate or are received at their destination, but that is not exclusively for that purpore, for it is likewise used for line purposes, and on the road the service that is being rendered is to carry the passenger or freight to destination and is as much a part of the destinating expense as the actual receipt or delivery at a particular point. If a man is traveling as a passenger 10 miles, or traveling 100 miles, in each of those miles there is incurred a certain proportion of that expense of receiving him and of delivering him and that should be and is in proper railroad accounting spread over the total expense, and charged properly to each mile traveled by him; and likewise on the freight side, the same is true of the movement of tons of freight. The passenger mile and the ton mile statistics compiled by all railroads express these facts.

Now, this Formula attempts to divide all items of expense into one or the other of these classes or apportion such as are indivisible into one or the other class upon a unit used for that purpose. It produces results that cannot be reflective of true conditions. Take, for instance, the

president's salary. Under this Formula a much larger percentage per passenger mile is worked out for the state passenger than is for the interstate passenger. No one, by any argument, can justify this conclusion.

The carrying of all expenses through the line and terminal division brings out results quite different from what they would be if no such division was made and if the allocation was made direct to freight and passenger to begin with, and after being divided between freight and passenger, then to state passenger and interstate passenger or state freight and interstate freight, and the expense that is additional to state service, that is, for an additional terminal in the state, can be properly worked out by following actual instead of artificial divisions of expense. Take the train service, on the one hand, and station on the other, to illustrate this. There cannot be any possible difference between the cost of hauling a ton of freight which is state, to a ton of freight which is interstate so far as the haulage is concerned, where the haul is under similar conditions. It is well known that freight is hauled in two classes of trains, through and local. It is well known that the local is a more expensive train than the through. There can be no possible distinction in expenses between freight hauled on a local, whether state or interstate, and freight hauled on a through, whether state or interstate, respectively. The testimony shows that the local train is largely used to aid the through train and distributes company material and empty cars for the benefit of the whole service. The added expense of the local train should not all be carried to traffic that is borne upon it. On the passenger side, there can be no possible distinction in the haulage expenses between passengers riding in the same character of trains and the same character of equipment. There is a marked distinction in service and in expense between passengers riding in Pullmans and in day coaches, but when a passenger receives the same service it is at the same expense to the railroad whether he is a state or an interstate passenger.

Therefore it is seen that so far as the haulage cost is concerned the expense is not properly a line expense, as line is used in this Formula, but is an expense of the character of service rendered whether it is freight service or

passenger service, and there can be, and is, no possible distinction in that expense when the state passenger or the interstate passenger or the state ton of freight or the interstate ton of freight receives the same service from the same class of train. Therefore the haulage expense is necessarily and naturally an expense determinable from the service rendered to either the freight or the passenger.

Now, take the station side of it. There are, broadly speaking, two terminals for each ton of state freight and two terminals for each state passenger as against one or none for the interstate respectively. This is an expense not incurred by the interstate to the same extent as the state within the borders of a given state. It is ascertainable from data easily compiled and to be found in the time studies in this case if they were reliable in determining the number of handlings of tons and passengers at each station respectively. That and that alone is the extra expense of the state business. Instead of trying to arrive at it in this way the Formula builds up this artificial distinction between Line and Terminal, and runs it through the train service, through the yard service, through the station service, through the general expense and every other phase of railroad expense that may be found, creating distinctions which do not exist and making differences where there are none.

The yard service is a distinct service of itself. The classification of the making up and breaking up of trains as Line in the Formula throws a burden upon every pound of State freight of bearing this expense in the same proportion per ton mile as the interstate freight, which receive a much larger proportion of this service than does the State freight. The statistics of the road, either already compiled or easily accessible, would give all the cars handled in and out of division yards, their way-bills would show them to be state or interstate and this expense could be directly located to the state or interstate, as it should be, instead of being carried through the Line and Terminal division.

An illustration of the inapplicability of this division can be found in Maintenance of Equipment in all of its branches. The locomotive from the time it starts on its journey until it is ended, is hauling freight or passengers,

as the case may be, and receiving injuries and wear from so doing. It is admitted by the authors of the Formula and by the witnesses in this case that the division of this expense cannot be ascertained other than by the opinion of experts, wherefore they introduced an expert who, from his experience in mechanical engineering and practical railroad operation, attempts to locate so much of these repairs to Line and so much to Terminal, while he admits that no such distinction was ever known in his railroad experience and he is looking backward on his railroad experience in the light of this Formula to ascertain whether given classes of expense belong on the one side to Line or on the other side to Terminal. The authors of the Formula have confessed to a truth when they say that this expense cannot be divided except through opinion evidence, but the reason, however, is different than that given by them. It is insusceptible of such allocation. In truth these expenses cannot be divided according to such distinctions as line or terminal because they are interwoven between the two, and no man or set of men can tell where much, if any, of it occurred. For instance, it is in evidence that a strain will occur upon a locomotive and a break will occur in the line, probably not due to anything on the line but due to some handling at the station or in the yards before it is started on its journey, or latent defects in the mechanism, or mayhap like the one horse shay, it goes to pieces all at once, not as a result of either line or terminal service, but the result of both for years.

Mr. Symons testified that 80 per cent of the damage to freight cars is in rough handling, and that is principally in yards, yet 80 per cent is not distributed according to his own classification of it. He makes other and further distinctions between Line and Terminal and yet 80 per cent of it, according to his theory, is due to rough handling in classification yards, and this is line service under the Formula, yet he works out 64 per cent of this expense to terminal. This but illustrates the fact that these expenses are insusceptible of allocation between Line and Terminal.

Take the painting of cars for further illustration; time and weather alone determine the necessity for this, unless an accident makes it necessary, and the time spent on the

road or the time spent in waiting for the train movement are not determining factors to fix this expense. Recently we have had an illustration of the impossibility of ascertaining such elements. In view of the threatened strike there was an embargo laid on the receipt of freight for a few days, therefore thousands of freight cars throughout the country were tied up and had no movement at all, and yet, under this Formula, painting expenses during the period of inaction would be charged to terminal. At times there is congestion of traffic, usually in the east, cars cannot be gotten out of the great terminals; there is a scarcity of them in the west and the south; sometimes there is congestion in the south when there is a rapid movement of the cotton crop; sometimes in the west in the rapid movement of the grain crops. These traffic conditions determine the character of the expense, but this Formula puts all the expenses of this congestion in Terminal service, when in fact it was an expense incident to the whole business and not to this part of it. Time is not a factor to determine Line and Terminal service. The real facts are, as developed in the evidence showing actual railroad operation, that all of these expenses for the repairs of cars and locomotives are mere incidents to the service and are not susceptible of being divided in these artificial classes because these classes do not exist in the actual operation.

Another illustration of the impossibility of making such a division between Line and Terminal is found in the wages paid to trainmen. Accounts 80 and 88 are among the big items of the expenses of the road. Probably 15 per cent of the total operating expenses are represented by these two accounts. The Formula apportions these expenses between Line and Terminal on the basis of the time spent by the train in Line service and in Terminal service as determined by the time studies made by the railroads, which are mere hearsay testimony at best. These wages are based largely, if not wholly, upon the mileage run and not upon time. When a run is not made within the time, there is a system of overtime which has lately been much in the public view. The overtime is caused principally, on the passenger side, from accidents and weather conditions, and, on the freight side from these causes and from overloading of the trains.

The element of time has little influence on the amount represented in these accounts.

These wages were for the two months test period of 1913, were $83,422.81, of which $16,701.58 was assigned to terminal (Ex. 8, R. p. 1991). This means $500,536.86 per annum and an annual charge against terminal of $100,209.48. This terminal is divided between terminal freight and terminal passenger, and of the freight terminal 31.65 per cent is charged to intrastate freight (Ex. 15, R. 2018), and of the passenger terminal 74.52 per cent is assigned to state passenger (Ex. 16, R. p. 2020).

The use of the stations when stopping thereat by these trains has not, as a general proposition, added one dollar to the amount paid these trainmen by the railroad, and yet of every dollar paid them approximately 20 per cent is charged to Terminal and of that amount 74 per cent on the passenger side to the state, while no use representing that expense has caused it, and on the freight side 31.65 per cent of it is charged to state freight, wherefor no distinct service is rendered as terminal and the terminal service did not incur the expense as such.

ASSIGNMENT TO STATE BETWEEN LINE AND TERMINAL OF EQUIPMENT REPAIRS.

The railroad contends throughout that the cause of the great increase of state expense as worked out under the Formula is due to the more numerous uses of terminals by the state freight and passengers. That is the basis and the only basis for the contention that the state traffic, freight or passenger, is more expensive than the interstate freight or passenger. There is much discussion of the short haul as producing greater expense, but that in its last analysis works back to the excessive use of terminals. The railroads introduced Mr. Symons to establish a relation between Line and Terminal so far as equipment repairs are concerned and took the estimates of the General Managers sustained only by his testimony upon which to apportion between Line and Terminal these great items of expense.

The testimony shows the traffic is divided into three

classes, viz: intrastate with two terminals in the state, the strict interstate with one terminal in the state, and the trans-state with no terminal in the state.

All of the repairs, renewals and depreciation of equipment on the entire system of each of these roads is thrown into a pot and the part assigned to Arkansas ascertained by taking the mileage run respectively by the locomotives or cars in Arkansas as compared with mileage run by the locomotives or cars in the system. These repair accounts thus thrown into the pot and thus segregated to Arkansas include all repairs, Line and Terminal, as defined in this Formula, alike. Necessarily, if the Formula be true and Mr. Symons be correct, and upon that assumption the plaintiffs predicate their case, the amount of these expenses assignable to Terminal is as given therein. These Terminal injuries, resulting in the expenses referred to, occur alike in and out of Arkansas. To every pound of freight and t every passenger there is somewhere two terminals, whether in or out of Arkansas. Therefore it is apparent that so far as the trans-state freight and passengers are concerned, the Terminal expenses of the same must be eliminated before there is an assignment to Arkansas of these expenses. The railroad in this case has not been backward in finding all the terminal expenses in Arkansas, but they have been backward in finding the Terminal expenses out of Arkansas. If the Line and Terminal division is to be applied in Arkansas to all of the expenses assigned to the state, the Terminal expenses out of Arkansas must be segregated, in order to arrive at the truth in regard to the amount to be apportioned after the assignment is made to Arkansas. It is apparent that the Terminal expenses outside of Arkansas must be subtracted from the amount assigned to Arkansas, if the truth is to be found. We have not available any statistics on the amount of trans-state freight traffic. It may be gathered from the evidence that it is considerable and the total interstate freight is 96.35, intra-state 3.65 and interstate passenger, 56.23 and intrastate 43.77 (Ex. 40.)

To put the proposition concretely, 96 per cent of the freight traffic is interstate, and 56 per cent. of the passenger traffic is interstate. Broadly speaking, none of these has more than one terminal in Arkansas, (the exception being

such traffic as cotton and lumber, which are carried into compress and mill points, and re-shipped, and some passenger transferred at junction points), and much of it, probably much more than one half of the freight has no terminal in Arkansas, but is that large volume of traffic passing south from St. Louis to Oklahoma and Texas, through one corner of the state; and the reverse traffic coming from Oklahoma and Texas to St. Louis and east. And on the other side of of the state, large traffic from Memphis to Missouri points, and from Missouri points to Memphis and beyond, which has no terminal expenses in Arkansas. To illustrate this this movement, suppose a carload of Missouri mules were shipped abroad, taking the Frisco road at some point in Missouri, passing through the northeastern corner of Arkansas to Memphis, and thence to the sea board. This shipment would have a terminal expense in Missouri and another one in Memphis, or at some other point beyond Memphis where the 'Frisco road delivered the mules to another line; say at Birmingham, Ala. The two terminal expenses, say at Kansas City, Mo., and Birmingham, on the Frisco road, would be incurred wholly outside of Arkansas and the car in which the mules were shipped would make a mileage, say for the sake of this illustration of 1000 miles, 100 of which was in Arkansas; and taking this shipment as an illustration of the entire expense of freight car repairs it would be found that one-tenth of the freight cars repairs incurred by that shipment would be assigned to Arkansas, because the mileage in Arkansas compared to the total mileage of the car was one-tenth thereof. According to the estimates of the General Managers, which were used to divide the freight train car repairs between line and terminal 36.03 per cent. is assigned to line and 63.97 per cent. assigned to terminal, (Formula page 14), for easy illustration this will be referred to as 36 and 64. Suppose that the freight car repairs on the car carrying the mules was $100, for the mileage which it traveled and for the two terminal expenses incident to the haul from Kansas City to Birmingham, according to the Formula, $36.00 of this was incurred on the haulage between the terminals, and $64.00 was incurred in the two terminals, Kansas City and Birmingham. Ten per cent of the $100.00 represented the Arkansas proportion of the total expense, measured by the proportion of the car miles in Arkansas to the total and this $10.00 includes

$6.40 incurred at Birmingham and Kansas City, and only $3.60 incurred in Arkansas. Take another illustration of the actual movements on the 'Frisco road, a shipment of merchandise from St. Louis, Mo., to Fort Smith, Arkansas, a distance of 414 miles, of which 109 was in Arkansas. There are two terminals on that shipment, one in St. Louis, Missouri, and one in Fort Smith, Arkansas, roundly speaking, one-fourth of the mileage is in Arkansas and one-fourth of the expenses would be assigned to Arkansas. Suppose, again that this expense was $100.00, $25.00 of that would be assigned to Arkansas, but of the $100.00, $64.00 was incurred, according to the Formula for terminal use; one-half of which was incurred in Arkansas and one-half of which was incurred in Missouri. Therefore this is the result: $100.00 is the total expense, the mileage in Arkansas being one-fourth, $25.00 is assigned to it. This $25.00 is made up of two elements, one, line, and one, terminal, all of the line part of this is properly assigned to Arkansas, which is $9.00; the other part of it, 64 per cent, or $16.00, is all charged to Arkansas; whereas, one-half of that or $8.00, was incurred in Fort Smith, Arkansas, and the other half in St. Louis, Missouri. The $8.00 incurred in St. Louis should be subtracted from the expenses assigned to Arkansas and would leave of the $25.00, the $8.00 incurred at the terminal in Fort Smith, and the $9.00 the Arkansas proportion of the injuries received in the haul or a total of $17.00, should have been assigned to Arkansas, instead of the $25.00. In the other illustration of the transtate freight of the $10.00, Arkansas' proportion of the expense, $6.40, was erroneously assigned to the state, when the amount should have been only $3.60 instead of $10.00. The same proposition (less only in degree of error) applies to the passenger car mile division, between line and terminal, and to the locomotive mile division, between line and terminal. Exhibit 21 shows the total operating expenses assigned to Arkansas, for the year 1913 was $3,116,570.38, and of this maintenance of equipment expenses were $603,200.21, constituting 19.36 per cent. of the whole; and of this maintenance of equipment expense, $603,200.21, is divided between line and terminal, on the percentages stated in the Formula, at pages 13 and 14, and resulting in charging to the state the total expenses both line and terminal, in proportion to the mileage run of the equipment of the whole system, compared to the mileage run

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in Arkansas, and including, the terminal expenses incident to the service of the equipment out of the state as well as within the state. This is not true of freight locomotive repairs, which are divided on time studies between line and terminal, but those time studies should have been divided between line and terminal in the system before apportionment to Arkansas. It is a difference in detail, not principle. As the interstate is about 96 per cent of the freight ton miles and 56 per cent. of the passenger miles, it is apparent that a vast majority of the terminal expenses were incurred out of the state. The margin of error here is so great that no reliance can be placed upon the processes of the Formula, which is put to work upon the expenses assigned to Arkansas in this manner. If the line and terminal division is true, and if these percentages, sustained by Symons' testimony, are true, then a great majority of the expense was incurred outside of the state, and yet the sum representing that expense incurred outside of the state is assigned as the part of the expense distributed within the state, and upon that swollen sum there is an attempt made through the Formula to work out a division ultimately between state and interstate, which is necessarily too much by the amount incurred from terminal service without the state.

IMPROPER DISTRIBUTION OF LINE AND TERMINAL EXPENSES.

1. General Expenses:

The railroad insists that all expense is inherently divisible between Line and Terminal and the Formula is predicated on that theory and attempts to do so. The railroad traces into each of the five primary accounts, Maintenance of Way, Maintenance of Equipment, Transportation, Traffic and General, both Line and Terminal expenses. In Maintenance of Equipment it is probably more stressed than in other primary accounts, but in all of them except Traffic there is a division drawn between these expenses. Traffic is treated as all Terminal and all distributed on the Line units.

The distributions between Line and Terminal, however, are not made until the expenses are assigned to Arkansas.

In the accounts of Maintenance of Way and Transportation the expenses are practically all local to Arkansas. There is some small part even of these expenses assigned where a district crosses the state line, but broadly speaking, all of the Maintenance of Way and all of the Transportation expenses arise within the state of Arkansas and the division between Line and Terminal, if such can be made, properly begins with the sum of expense found to be incurred in Arkansas. But it is different when we examine the accounts of Maintenance of Equipment, Traffic, and General.

General Expenses, Traffic Expenses, and Maintenance of Equipment expenses cannot, or at least are not located to Arkansas, and are therefore, in this Formula, apportioned to it upon the basis therein shown. The Traffic Expenses on the entire system are thrown into a pot, or rather, two pots, one passenger and one freight, and apportioned to the state on the basis of the revenue net ton miles for the freight and revenue passenger miles for the passenger. That is to say, the passenger miles and ton miles in the State of Arkansas are compared with the system as a whole and the proportion which Arkansas bears respectively to the system is the proportion of the expenses freight and passenger assigned to Arkansas. After being assigned to Arkansas they are all classed as Terminal, but are apportioned on the Line units. It will be noticed that while the railroad insists that all expenses are divisible between Line and Terminal they are not so divided before being apportioned to the state, and in this instance the division comes after the apportionment to Arkansas, and in this account they are divided on the passenger mile and the ton mile units between state and interstate and are not divided between Line and Terminal within the state as are all the other expenses, but are at once carried to the Terminal side of the equation.

It divides the total expenses between the system and Arkansas on one unit and the expenses thus assigned to Arkansas on the same unit between state and interstate. In another respect this account is used as an improper basis. It is all treated as Terminal and carried as a Terminal expense in its entirety and added to the Terminal expenses ascertained under the Formula in each of the other accounts; then all the Line and Terminal expenses are used as a basis to divide the overhead between Line and Terminal and for

other similar purposes and in this way the Terminal is unduly increased. But we are not going into that feature at this time.

The assignment to Arkansas does not consider a division between Line and Terminal expenses either in Arkansas or out of it, and so far as the apportionment to the state from the system is concerned and so far as the apportionment between state and interstate after this sum is assigned to the state, the same basis is used and no objection can be raised to it as an accounting proposition. If, as a matter of fact, every dollar spent for Traffic Expenses was equally for the benefit of the intrastate with the interstate, this would be a fair method of division, but that is a question of fact and not a question of accounting. And if these expenses were not carried to the Terminal side, and we contend that they are in no sense Terminal, there would be no objection to this account in any way, and it is set forth here to draw the contrast and to explain methods rather than to criticise it.

On General Expenses, after those distinctively freight and passenger are split off, the apportionment is made to the State on the basis of assignment of all operating expenses, Accounts 1 to 105, (except General offices, which is itself an overhead). They are carried directly to the freight and passenger after apportionment to the state and are thus divided in the freight and passenger Line and Terminal divisions and differ only in detail from the mass of the General Expenses which are under discussion. After the General Expenses are thus set apart to the state they are in turn divided between Line and Terminal and ultimately between state and interstate. This plan contains an accounting error that injuriously affects the state, and which was not in the plan applied to Traffic Expenses. The General Expenses are set apart to the state on the basis referred to and then divided between Line and Terminal and the Line and Terminal split up into passenger Line and Passenger Terminal, Freight Line and Freight Terminal, and ultimately the Passenger Line and Freight Line, Passenger Terminal and Freight Terminal is split up into state and interstate. This plan contains two radically wrong principles: First, the assumption that the General Expenses, such as the president's salary and office force, law expenses, claims department,

pensions and all other like items, should be divided between Line and Terminal when there is no relation between these expenses and such divisions. In other words, these General Expenses were incurred as a whole and not in the fragments into which they are split by the Formula. The operation of this error is to carry into the Terminal side an excessive proportion of the total expense due to the use of Symon's percentages and the various time studies of station employes, trainment, switchmen, etc. But that phase of the error is elsewhere discussed and attention is now called to the other phase of it. Second, a fundamental error and one with which we are now concerned in this chapter is the assignment to the state on one basis and the apportionment of the amount thus assigned to the state on another basis, or rather on many other bases. On the face of the Formula it would appear that the assignments were identical, but that is a delusion. The assignment to the state is based (after splitting off the freight and passenger expenses, distinctively such) on the relation that Accounts 1 to 105 in Arkansas bear to Accounts 1 to 105 in the system (Formula, page 11). After this is found then it is apportioned, after dividing between freight and passenger, between Line and Terminal on the basis of Accounts 1 to 105 in each (Formula page 16). The common expenses are divided between freight and passenger on the basis of Accounts 1 to 105 (Formula, page 24). And the same process is then followed in the further development of the separation. There is a peculiarity in the traffic which renders this seemingly uniform basis a delusion, as it is not in fact a uniform basis. As heretofore stated, the expenses under the accounts of Maintenance of Way and Transportation are practically all local to the state, and all of the Line and Terminal expenses, as defined in this Formula, are to be found within the state, but such is not the case in regard to General Expenses, Traffic Expenses, and of Maintenance of Equipment Expenses. Those expenses are made up of Line and Terminal expenses incurred everywhere in the system including Arkansas and out of Arkansas. Passing for a moment the Traffic, as that is treated differently, as heretofore stated, it is seen that General Expenses and Maintenance of Equipment expenses, are made up from every activity of the railroad and every part of the system and in every department of work. Every pound of freight and every passenger whether revenue freight or company material,

revenue passenger or deadhead passenger, has two terminals somewhere. Under the theory of separating the Line and Terminal expenses, they are separate quantities incurred at the origin and destination of the freight and passenger and they, being somewhere on the system, enter into the total expense for these two accounts. In other words, all of these expenses under General Expenses and Maintenance of Equipment Expenses are each thrown into a pot on the system and the Arkansas share taken therefrom on a basis which is supposed to represent Arkansas' fair proportion of those expenses. In the instance under consideration, General Expenses, this assignment to Arkansas is made on the basis of the relation of all expenses in Accounts 1 to 105 in Arkansas to the same accounts in the system, and no one of these accounts recognizes Line and Terminal; in fact, according to the Formula, into each of them Line and Terminal is traced and each is separated into Line and Terminal, but that is done after the assignment is made to the state. The freight and passengers with which we are now concerned are the intrastate and those intrastate passengers have incurred the full measure of Line and Terminal expenses. To each is ascribed the passenger miles or ton miles, as the case may be, and to each is ascribed the expense of the terminal, whether freight or passenger, and in the case of the intrastate the expense of two terminals is necessarily ascribed to it or to him. The assignment to Arkansas includes the interstate expenses, freight and passenger, as well as the intrastate. This interstate has likewise, a full measure of expense, Line and Terminal, as the intrastate, but, so far as the Terminal is concerned, not within the borders of Arkansas. Part of the interstate, which is sometimes called strict interstate, has one terminal expense in Arkansas and one without Arkansas, another part of the interstate, the trans-state, has no terminal expense in Arkansas, but these expenses of the interstate are in the pot just as the Arkansas intrastate expenses are in the pot.

It is argued as a reason for the Line and Terminal division that the state has two terminal expenses and the interstate never more than one and a considerable portion of it none in a given state, and that the General expense should bear its proportion of each class of the expense, and that therefore there is more expense to the state traffic on account of the additional terminals than to the interstate, and

much is said of the shorter haul of the state traffic, both freight and passenger, producing the additional terminals and thereby the additional expense. But all of this expense, whether produced in Arkansas by short hauls or whether it be long haul traffic, has two terminals and the expense of the two terminals has gone into the pot. These terminal expenses incurred by state freight and state passengers, be they tangible or intangible, which have been traced into the General Expenses, form a constituent part of the pot of General Expenses along with all other tangible and intangible terminal expenses traced into this pot of General Expenses incurred in other parts of the system than Arkansas.

We elsewhere contend that General Expense, from its nature, is insusceptible of the Line and Terminal division, but the Formula claims otherwise and the exhibits in this case attempt to trace into either Line or Terminal every dollar of General Expense assigned to Arkansas.

Turning to Exhibit 8, page 3, it is found that for the two months' period, November and December, 1913, General Expenses were divided 63.51 per cent. line, and 36.49 per cent terminal; for brevity this will be referred to as 64 per cent. line and 36 per cent terminal.

In other words, 36 per cent. of all General Expenses are traced into Terminal. Thereafter the Line and Terminal fragments are spit into Freight Line and Passenger Line, Freight Terminal and Passenger Terminal, and finally these fragments are split into state and interstate. The sum thus obtained and upon which the processes of the Formula begins to work was taken out of the pot containing all these terminal expenses everywhere, and it must be remembered that in this pot, Arkansas intrastate had its full measure of expenses as all expenses incident to its two terminals were in it, just as all the expenses incident to the terminals, at least one of which was without Arkansas, were in the pot on the balance of the traffic. But after obtaining that sum containing the full measure of the Arkansas intrastate Terminal expenses traced into these General Expenses, the Formula ignores the fact that the interstate terminals out of Arkansas had increased the general pot to their extent, and divides the sum obtained from the general pot on the Terminal's handlings, which will ascribe no part of the trans-state, and only one of the interstate to the interstate side of the ac-

count. This plan necessarily increased the charge to the intrastate on account of its greater number of terminals relatively in Arkansas to the interstate and trans-state.

To illustrate with these figures: Suppose the General Expenses of the Frisco were $100,000, divided approximately 36 per cent Terminal and 64 per cent Line, and that the Arkansas proportion thereof, on the basis of assigned charges was, say 10 per cent; that would assign to Arkansas $10,000, but this process ignores the Line and Terminal division as apportioned to Arkansas which is based entirely on the relation of Accounts 1 to 105 in Arkansas, to those same accounts in the system and they did not recognize Line and Terminal. Had Line and Terminal been recognized there would have been assigned to Arkansas under the assumed division $6,400 of Line Expenses and $3,600 Terminal. By reason of the Terminal expenses incurred everywhere in the system there are $3,600 more expenses assigned to Arkansas than would be if there were no Terminal expenses. This $3,600 represents Arkansas' proportion of two terminals on every pound of freight and on every passenger, intrastate, interstate and trans-state, touching Arkansas, although most of the interstate was incurred outside of Arkansas. Then the $3,600 is apportioned on the basis heretofore stated, which basis, if the theory of the Formula is correct, will attach to state and interstate freight and passenger the proper proportion of each dollar of it. Owing to the fact, that when treated within the State of Arkansas alone, necessarily a greater proportion relatively of this sum will be attached to the state than to the interstate or trans-state, owing to the more numerous terminals of the intrastate, but the $3,600 is made up in part of the expenses of the trans-state tons which pass through Arkansas, the terminals of which were outside of the state, say in Missouri and Tennessee, and of the strict interstate tons and passengers the expense of one terminal was outside of the state and one within the state. Therefore, the sum upon which the Formula is put to work is much larger than it should be because of this $3,600 of terminal expense. A large portion of it is made up of the share of the interstate and trans-state terminals out of the state, and the sum should be much less, say, for instance, the sum was $1,000 instead of $3,600, then that $1,000 should be worked upon by the Formula instead of the $3,600, and the amount incurred

by the state and interstate found and attached to each respectively. Assuming that the $1,000 would be the correct amount representative of the Terminal expenses incurred in the state for the business transacted within it, under this account, instead of the $3,600, no injustice could be done the interstate because this would be the sum actually incurred in the state, just as the Maintenance of Way sum worked upon by the Formula is the amount actually incurred in the state, and the Transportation sum worked upon by the Formula is the amount actually incurred in the state, and the authors of the Formula assume that it can take the sum actually incurred in a state for a given expense and correctly allocate it to state and interstate by tracing it through the various bases in the Formula designed for that purpose in order, as it claims, to properly attach the actual terminal expenses incurred in the state for the respective state and interstate traffic, divided between passenger and freight. Therefore, it is apparent that in working out the processes of the Formula, under the Line and Terminal theory, that the assignment to the state of General Expense is wrong, if the Line and Terminal be a true division.

If there be no such distinction as line and terminal in general expenses, as we most earnestly contend there is not, the assignment of these general expenses on the basis of taking the proportion of accounts 1 to 105 in Arkansas, compared with accounts 1 to 105 in the entire system, there would be no criticism of the method, and the error, if any, would be in the underlying factors constituting these accounts, and not of the theory of reaching the proper proportion of these expenses to be assigned to Arkansas. But the Formula and the railroad's case is entirely predicated on the theory that there is a radical distinction between line and terminal, which runs through all of these accounts, including the general expenses and results as heretofore seen in assignment of the general expenses, 64 per cent to line and 36 per cent to terminal. This method works out an excess cost against both the state freight and passenger traffic, when there should be no excess cost in the general expenses worked out against either. The following table computed for this brief by Haskins and Sells shows the excess cost in general expenses, worked out against each class of traffic by the Formula in the plaintiff's exhibits:

Freight: Months of November and December, 1913.

General Expenses	Total	%	State Amount	%	Interstate Amount
Line (exhibit 14)	$ 8,617.77	5.62	$ 484.32	94.38	$ 8,133.45
Terminal (exhibit 15)	6,385.50	28.62	1,827.53	71.38	4,557.97
Total	$15,003.27		$2,311.85		$12,691.42
Revenue. ton miles (Ex. 6)	19,589.27		671.791		18,917.398
Cost per mile (in cents)			0.3441		0.0671
Percentage of excess cost of State over Interstate					412.82

Passenger:

General Expenses	Total	%	State Amount	%	Interstate Amount
Line (exhibit 13)	$ 3,599.46	38.00	$1,367.79	62.00	$ 2,231.67
Terminal (exhibit 16)	925.75	67.17	621.83	32.83	303.92
Total	$ 4,525 21		$1,989.62		$ 2,535.59
Rev. passenger miles (Ex. 6)	9,895.424		4,012.199		5,883.225
Cost per mile (in cents)			0.0499		0.0431
Percentage of excess cost of State over Interstate					15.78

Thus it is seen through the processes of the Formula in the distribution of general expenses, there is worked out against the state freight an excess cost of 412.82 per cent, and against the state passenger an excess cost of 15.78 per cent. This is due to two facts; one, the assignment to the state of too much general expenses, including in that assignment the expenses of terminals incurred outside of the state (if there be such separation in this class of expenses), and the second, other errors of the Formula, which work out excessive costs against the intrastate traffic. How much is due to one, and how much is due to the other no one can ascertain, from the data in this record. That the intrastate freight should bear 412.82 per cent extra cost over the interstate freight, and that intrastate passenger should bear 15.78 per cent excess cost over interstate passenger in the general expenses, is a proposition that no one for a moment will believe. None of the elements constituting the so-called extra cost, short haul and more numerous terminals of the state traffic applies to general expenses. If the contentions of the railroad be conceded for the sake of the argument, that these short hauls produce more terminals to the state traffic than the long haul the interstate, per mile run, and therefore incur extra expense at stations, and extra expense in terminal handling of the cars, lost time at the terminals for

the use of the cars, and the various other matters asserted as producing excess cost of state over interstate business, yet none of these could apply for a moment to the general expenses. An element of so-called extra cost of state freight over interstate freight is the larger proportion of intrastate freight moving on the local trains, than on the through trains. The elements of the extra expenses of the local train are the expense incurred for the benefit of the through train as well as for itself, but if they be conceded as an element of extra expense working against the intrastate, for the sake of the argument, certainly it doesn't apply to general expenses. And no element of extra expense to the state traffic over the interstate which has been contended for, can possibly reach to the general expenses, yet the grotesque results, above shown, were brought out through the erroneous assignment of excessive amounts of general expenses to the state (if the line and terminal distinction is true), and secondly through the erroneous processes of the Formula.

2. Maintenance of Equipment Expenses:

The same proposition, except in much aggravated form, is found in the assignment of the equipment repairs to the state between Line and Terminal and thereafter split up until they ultimately are divided between state and interstate. Maintenance of Equipment Expenses, Accounts 25, 26 and 27, repairs, renewals and depreciation of locomotives; Accounts 31, 32 and 33, repairs, renewals and depreciation of freight cars; Accounts 34, 35 and 36, repairs, renewals and depreciation of passenger cars, amount to approximately 20 per cent of the total operating expenses of the road.

Locomotive and car repairs are incurred by and for the system as a whole. The railroads have shops located at such points on their system as is most convenient for operation. The repairs are done at those various shops irrespective of state lines; the shops are of two kinds, those for general repairs and those for running repairs, and each of them works irrespective of state lines, and wholly for the convenience and economical operation of the railroad as a whole. These repairs are all pooled, that is, respectively, the engine repairs being in one pot, the freight car repairs

in another and passenger car repairs in another. In the assignment to states in the Formula these repairs are set apart to each state on the basis of the engine or car miles run in the state compared with the engine or car miles respectively run in the system. The theory is that the cost of repairs in Arkansas for engines is identical per mile run with the cost of repairs per mile in the balance of the system, and the same theory as to freight cars and the same as to passenger cars.

So far as freight cars are concerned, we have no quarrel with this plan of itself, as it is a generally accepted fact that freight cars throughout the United States are of about the same grade, and the expensiveness of them per mile run is practically the same in the same section of country. In regard to the passenger cars, it is questionable whether Arkansas is fairly treated, that depending upon whether the equipment in Arkansas is equal to an average of the equipment of each system. The same thing is true of the locomotives. But we are not concerned with these problems in this discussion. We will assume for the sake of this discussion that the engine mile is the proper factor with which to divide the engine repairs, renewals and depreciation between the state and the system and that the car mile is the proper factor for the passenger and freight cars.

The equipment repairs which have gone into this pot are made up of two classes of repairs according to the theory of the Formula: line and terminal, as therein defined. At pages 13 and 14 of the Formula, these repairs are divided on the General Managers' percentages, supported in the main by the testimony of Mr. Symons, except freight locomotive repairs, which are divided on time studies between line and terminal within the state, but not before. Passenger locomotive repairs are divided between line and terminal in the same proportion as determined for passenger cars, which is: 64.94 per cent to line, and 35.06 percent to terminal, and freight car repairs are divided 36.03 to line, and 63.97 to terminal; which for brevity will be referred to as 36 and 64. The terminal proportion of these repairs range ing from 35 to 64 per cent are as much in the pot as the line proportion of them; they are in the pot as a whole, not in the pot in distinct classes, but they are put in a dis-

tinct class after their assignment to the state. Taking again easy figures for illustration, suppose that one million dollars represented the repairs to freight cars on Frisco system, and that the freight car mileage in Arkansas, compared with the freight car mileage of the Frisco system was 10 per cent, therefore $100,000 would be set apart to Arkansas as its proportion of the freight car repairs. According to the Formula $640,000 of this $1,000,000 was due to terminal service, and $360,000 incurred in the line service. The injuries causing repairs to the amount of $640,000 was due to terminal service everywhere in the system and represented the use of two terminals for every pound of freight handled on the freight cars. The same proposition is true, of course, as to locomotive and passenger car repairs; but the illustration, for the purpose of simplicity, is confined to the one class and it applies, only differing in percentage assigned to line and terminal in the other equipment accounts.

Exhibit 40 shows the percentage of the total ton miles in Arkansas to be intrastate 3.65 per cent; interstate 96.35 per cent, and this is a factor which will fairly represent the car mileage in the state as between state and interstate, and indicates that practically 96 per cent of the freight traffic in Arkansas is interstate. There appear no car mile statistics of the traffic within the state, so the ton mile to illustrate the relationship is referred to. There are no statistics in the record showing what proportion of this traffic is trans-state; Mr. Hamilton frequently said it was a large volume of the traffic of the road, and as the road cuts into three corners of the state it is reasonable to assume that the trans-state traffic amounts to the major part of it. Of the million dollars total freight car repairs, of the entire system, using the illustration, $640,000 of that represented injuries received in terminals, as defined in this Formula, and these terminals existed everywhere throughout the system. Every ton of freight, in the definition of terminal, under the formula, has two terminal expenses somewhere on the system, and it is these two terminal expenses somewhere on the system, that aggregate $640,000 of the total million dollars for freight car repairs. If the line and terminal distinction is the true one, in equipment repairs, and if these percentages given in the Formula are the true relations of

the line to the terminal, for these expenses, then the formula should have been applied to these expenss before their assignment to Arkansas, instead of being applied after the expenses are assigned to the state. In other words, the Formula if true should have been applied at the source instead of half way down the stream. If the Formula be true and these percentages be true, as applied to equipment repairs, then the amount assigned to Arkansas should have been worked out in this way:

Of the million dollars, 36 per cent, or $360,000.00 was due to line injuries and if the Arkansas mileage for freight cars was 10 per cent of the mileage of the freight cars in the system, then $36,000.00 of this expense as the line proportion of the total should have been assigned to Arkansas, and the terminal expenses should have been assigned on the basis of the intrastate tons actually handled in Arkansas, compared with the interstate tons actually handled in the system. These terminal expenses accrue according to the theory of the Formula, from the terminal handling the freight, and not to haulage of the freight. The appellees in their brief insist in many places that the haulage unit, ton mile, has no relation to the terminal unit, therefore as each ton of freight has two terminal handlings somewhere, the number of tons actually handled in Arkansas compared with the number of tons handled in the system is the only process consistent with the formula that could properly be used, in order to find the terminal proportion of the freight car repairs which should be assigned to Arkansas.

It is well worth while to follow the differences in applying the Formula half way down the stream instead of applying it at its source. This calculation is made of only the one item, freight car repairs, renewals and depreciation, but exactly the same error inheres in passenger car, freight and passenger locomotives, repairs, renewals and depreciation. In fact, it affects the entire Maintenance of Equipment expense, because superintendence and other accounts in it are divided on the expenses thus located.

The entire system Maintenance of Equipment expenses for the two months' test period of 1913 was $1,144,714.21,

of which $113,870.23 was assigned to Arkansas (Ex. 7, R. p. 1987).

Assuming the two months' period to be representative of the year, the amount assigned for the year to Arkansas would be $683,221.38. A sum too large to be negligible. The freight car repairs, renewals and depreciation on the system for the said two months' period was $608,279.38, and assigned to Arkansas on the car mile basis, $61,504.02, (Ex. 7, R. p. 1987). This is just a little over 10 per cent assigned Arkansas, and that percentage will be used for convenience. Assuming the two months' period to be representative, this amounts to an assignment of $369,024.12 to Arkansas for the year.

Next, this $61,504.02 is divided between line and terminal on the General Managers' percentages, resulting in assigning to line $22,159.90, and to terminal $39,344.12 (Ex. 8, R. p. 1991). This amounts to an assignment for the year of $236,064.72 of terminal expenses to Arkansas based on the mileage of the freight cars run in Arkansas to it run in the system. This sum of $39,344.12 is then taken through the non-revenue adjustment explained in Exhibit 10 (R. p. 1999), and worked out in Exhibit 11 (R. p. 2006), and then becomes $37,224.10. Then the $37,224.10 is divided between state and interstate on gross tons handled on terminal tracks, assigning 31.32 per cent to state, and 68.68 to interstate, resulting in $11,658.59, being assigned to the intrastate freight and $25,565.51 being assigned to the interstate (Exhibit 15, R. p. 2018). Thus it is seen that $11,658.59 is charged to the intrastate freight for the test period, at the rate of $70,043.54 per annum. Exhibit 21, making the assignment to the state and its subsequent apportionment to intrastate and interstate does not give the separate accounts, but gives maintenance of equipment as a whole, and therefore to make a calculation for a year of this particular account it is necessary to assume that the two months period represents the year. As the railroad contends it represents not only the year, but a series of years and goes back as representative of conditions in 1907, it cannot complain of this assumption.

Now contrast with the $70,043.54 assigned against the intrastate freight by the process of the Formula as worked

out in the exhibits the amount which would be assigned had the Formula been applied to the total expense of the system before assignment to Arkansas. No reason whatsoever can be given conceding, for the sake of argument, that line and terminal distinctions apply to freight car repairs and that the General Managers and Symons, have correctly divided them between line and terminal why that distinction should not be made in the system before segregating the Arkansas proportion from the whole. The line proportion will be passed as this calculation is only now dealing with the terminal. Exhibit B (R. p. 2222, the accuracy of the data therein is undisputed), gives the total tons handled on the system for the two test months as 3,248,360. Exhibit 6 (R. p. 1979 on p. 5 gives the number of tons handled in Arkansas for that period, as carload and less than carload, state and interstate. Exhibit A (R. p. 2216), prepared by Mr. Simson to prove that the terminal and line units in the railroad exhibits, even under their theory, were computed erroneously, shows that the intrastate tons were all handled twice and interstate once. Mr. Hamilton admitted the accuracy of this exhibit.

It analyzed Exhibit 6, and showed the intrastate tons were 63,733. This is less than 2 per cent of the tons moved on the system for that period. Taking the total expenses in the system of freight car repairs, $608,279, and split it between line and terminal on percentage of 36 to 64, gives $389,298 as the terminal part thereof.

Quoting from page 2 of Exhibit 4 of the Railroad Company (R. p. 1962): "Proceeding on the assumption, as indicated by the principle laid down in the Formula filed as Exhibit No. 1, that it costs the same per ton for a given terminal or station handling of a ton of intrastate freight that it does for such handling of a ton of interstate freight."

Therefore, the utmost that the Arkansas intrastate freight should bear of this is the proportion of it to the total tonnage of the system, less than 2%. Two per cent of it is $7,785.96. But the non-revenue adjustment lifting from freight the burden it carries for passenger reduces the amount about 5 per cent, therefore this charge should be $7,396.67, the maximum charge against intrastate freight for terminal expenses; whereas the processes

of the Formula bring it out $11,658.59, or excess charge of $4,261.92, which multiplied by six to get the amount for a year in lieu of a two months' period, gives an overcharge of $25,571.52, against intrastate freight on this one account. The appellees have criticized the state much for not carrying its calculations to the intrastate traffic instead of stopping on the whole business, but as no reliable Formula has been worked out to separate the expenses and property, it is as yet impossible, but the data in their exhibits are sufficient to demonstrate this error of freight car repairs amounts to an over charge to intrastate freight of $25,571.52 per annum. As this one item is but little over one half of the total maintenance of equipment expenses, it is a safe assumption that if there was data to trace through the other items an excessive charge of $50,000 a year would be worked out against the state traffic on this account alone. This, in a measure, accounts for the excessive terminal cost of Arkansas, as worked out in the exhibits, which, when applied to the system, showed an excess operating cost of $5,000,000 per annum over the actual expenses.

The General Expenses for the system are for the two months, $226,769.93, (Ex. 7 P. 3), at the rate of $1,360,719.58 per annum, and the method of assignment therein, as heretofore shown, contains the same error of method, and if comparable factors were in the record, would show excessive charges against state traffic, which results in the extra cost percentages of 15.43 per cent., against intrastate passenger, and 319.58 per cent against intrastate freight (Ex. 17, R. p. 2022).

It is folly to attempt any calculation correcting the errors discovered and discussed when the correction would carry with it the use of these percentages to the state business. For that reason it is again suggested that the many caluculations in the new brief, such as changing the division of common maintenance of way expenses between freight and passenger from engine ton mile to direct charges, or any other basis is valueless because the calculations ultimately use these extra cost percentages when it reaches the intrastate.

To illustrate: Turn to exhibit 21 (R. p. 2043), where the expenses for the year 1913 is shown. The total ton miles in

the state were 326,191,250, of which 9,151,859 were intrastate and 317,039,391 interstate.

Exhibits 40 (R. p. 2145) gives this ratio as 2.81 intrastate for that year, which a calculation of the above figures proves substantially correct (although not exactly so). But by adding the 319.58 extra expense for state freight, the percentage assigned to the intrastate freight expense becomes 10.80, instead of 2.81. There is consequently assigned to intrastate freight $218,366.56. Whereas if only 2.81 per cent. had been assigned the amount would have been $57,205.68, or $161,161 too much. This exhibit was on the alleged value of the property before the stipulation of value and Exhibit 61 (R. p. 2209) gives the values reduced to the stipulation. In it the revenue was reduced by the diminution tables to the extent of $20,389.53. From the net operating income must be deducted taxes, rentals, etc., which left a balance available for a return on the property of $4,517.64 producing on $1,444,061 value of property engaged in freight traffic .31 per cent, and this without the corrections made by the State's exhibits. To this $4,517.64, add the $161,161 arbitrarily deducted from the state operating revenue on account of the so-called extra cost of this traffic, and there is a balance available for return on the property of $165,678.64, which applied to the property this railroad exhibit assumes to be the value of the intrastate freight property and it produces a return of approximately 11½ per cent. This, too, assuming that the revenue from the enjoined rates, not the actual rates had applied. When it is considered that the enjoined freight rates produced a ton mile revenue of 24.79 mills, while the interstate rates produced 7.76 mills (original brief p. 47), it is not strange that without extra cost percentage attached the intrastate freight traffic is producing such a handsome return on the property. As it is seen that a large part of the extra cost percentage is worked out on such items as general expenses—412.82 per cent—when by no possibility the line and terminal division producing it, could have any application, it is fitting to reject it in toto, and when done the return shown is made. This should be reduced, in truth, because the engine ton mile division of common line expenses between freight and passenger, amounting to $114,143.07, for the two months' period, overcharges passenger and undercharges freight. This sum is divided practically even. (Ex-

hibit 9, R. p. 1995). Whereas, under statements seemingly accepted by all sides in Smythe v. Ames, the division should have been 30 to passenger and 70 to freight. This expense amounts in round numbers to $684,000, per annum in Arkansas. With such a yardstick, no wonder the freight shows such good return and passenger such poor return. The conclusion is inevitable that the assignment of expenses to the state without recognizing line and terminal in the system from which taken and then apportioning them on that theory swells enormously expenses assigned to the state, as it includes terminal expenses of one half of the strict interstate and all the trans-state which are incurred out of the state, and then by other erroneous methods, working on this swollen sum, produces an excess cost against intrastate traffic, which is thoroughly unreliable, and through such methods the charge of confiscation is sustained through this mythical extra cost percentage.

THE TIME STUDIES ARE HEARSAY.

The nature of the time studies, their method of compilation and far reaching effect of them are discussed in my reply brief on page 21-26. It was argued, that unlike reports of officers in due course of official duties and employees in making contemporaneous entries of acts done in course of routine duties, these reports were hearsay, and the summary of the various time studies expressed in percentages between line and terminal, etc., is a mathematical epitome of hearsay evidence. Instead of answering this argument the new brief contains many of the former statements which evoked this reply—that definite and minute information was obtained through these time studies; and time and again argue them as if established facts. Briefly stated, these reports contained divisions of expenses in stations made by the agents between several departments of work, the time of the various trains divided so as to work out a line and terminal proportion of time, the performance of switch engines, and many other special tests and counts and statistics made for the purpose of this suit, and were compiled under instructions by the various employees, sent in to the chief accountant for this case, and by him compiled into the statistics in the exhibits. Mr. Hamilton testified he thought them correctly made, but no man who made any of them was introduced; none of the reports themselves were in-

troduced, merely the summary of them worked out in percentages entered into the exhibits; and far more than half the total expenses are divided by the time studies alone, to say nothing of the numerous tests, special counts, etc., made for the purposes of this case. It seems useless to cite authority that such evidence is incompetent and that no decree can be based on it, but as the time studies are insisted upon, your attention is called to the law on the subject.

It does not come within any recognized exception to the Hearsay rule. These "Time Studies" and special statistics do not constitute entries required to be made in the due course of business by these plaintiffs, nor are they reports required by law to be made by these plaintiffs to any of the agents of state authorities. They are merely the conclusions of the agents of the plaintiff, taken with the view of use in this particular litigation and for the purposes of this case only.

No opportunity was afforded the defendants to cross-examine those who made these studies or reports, either to determine the accuracy and completeness thereof, or to determine the method employed by them in arriving at the results obtained, or whether they were acting under direct and explicit instructions from superior officers or agents, or to determine any other matter which might have become relevant in the course of their examination.

The court is asked to accept these reports as absolutely accurate, complete and true, to consider the divisions of time as therein set out conclusive, and all without the production and opportunity for cross-examination of a single witness who reaches these conclusions.

Certainly nothing could be more unfair to an adversary. It would be a wide departure from the ordinary and well established rules of evidence and no decree based on hearsay evidence should be affirmed.

The broad principles of equity demand such a course. One of the great reasons for the Hearsay rule—lack of opportunity for cross-examination—was as early as 1827, tersely stated by Mr. Jeremy Bentham in his Rationale of Judical Evidence, b. VI. c. I, sec. 2, as follows:

"In every instance that inferiority in respect of

probative force, in consideration of which the term Makeshift (i. e. Hearsay) was found applicable with equal propriety to them all, will be seen to have for its cause the absence of one of the principal securities for correctness and completeness, viz: interrogation *ex adverso* at the hands of a party whose interest, in the event of its being incorrect or incomplete, may in proportion to that incorrectness or incompleteness be made to suffer by it."

Chief Justice Shaw, in *Warren v. Nichols,* 6 Metcalf 261, stated the rule as follows:

"The general rule is that one person cannot be heard to testify as to what another person has declared in relation to a fact within his knowledge and hearing upon the issue. It is the familiar rule which excludes hearsay. The reasons are obvious and they are two; first, because the averment of fact does not come to the jury sanctioned by the oath of the party on whose knowledge it is supposed to rest; and secondly, because the party upon whose interests it is brought to bear has no opportunity to cross-examine him on whose supposed knowledge and veracity the truth of the fact depends."

Without opportunity for cross examination it is impossible for the adverse party to bring to light for the information of the court any sources of error, inconsistency or incompleteness that might exist in these reports which were made the very basis for the conclusions reached by the accountant.

Such evidence as this should be rejected by a court of equity upon its own motion. It should not form the basis of any decree against these defendants. There is no authority —either in law or equity—for receiving and giving consideration to such evidence as this.

A fortiorari, it should not be the basis for invalidating the action of a state, through its General Assembly and its Railroad Commission.

In the case of *Monarch Mfg. Co.* v. *Omaha B. & S. Ry. Co.,* 127 *Iowa* 571, 103. *N. W.* 493, the Supreme Court of Iowa held:

"Records of daily observations of temperature and precipitation, voluntarily made by a railroad agent and his clerks, and not preserved by any requirement of law or of the railroad company, nor verified by the person making them or otherwise, are not admissible to show weather conditions."

In *Reilly* v. *Freeman,* 82 N. Y. S. 929, 84 App. Div. 433 it was held:

"Upon an issue as to the value of the property of a corporation the minutes of the corporation containing the report of an expert employed at the time of its organization to examine and report on the value of the property were inadmissible."

In *Powell* v. *Northern P. R. Co.,* 46 *Minn.* 249, 48 *N. W.* 907, it was held that an *ex parte* order requiring the defendant to produce for the inspection and use of the plaintiff as evidence, certain reports in writing made to the defendant at its request as to facts and circumstances of an accident which was the foundation of the suit, was properly vacated, since such reports were necessarily but narrations or recitals of past events, were in the nature of hearsay, and could not be used as evidence of such events.

The defendants could not have compelled the production, nor could they have used these reports ,against the plaintiffs in this case. They were not records required to be kept in the line of duty by these agents and employes, but were in their very nature self-serving and hearsay.

In *Insurance Co., of North Amer.* v. Guardiola, 129 U. S. 642, it was held that reports of agents employed to ship sugar, which reports were not part of the shipping transaction, were incompetent, either in themselves, or in corroboration of the testimony of the agents, to prove the facts recited therein in a suit by the principals against third persons.

In the case of *United States* v. *Corwin,* 129 U. S. 381 the court held:

"In an action against the sureties on a contractor's bond to the United States to recover damages suffered

by reason of the non-fulfillment of the contract the burden of proof is on the U. S. to show a demand upon the contractor for performance and his failure and refusal to perform; and a statement of such non-performance, demand, failure and refusal, made by an officer of the government in the line of his official duty in reporting them to his official superior, is not legal evidence of any of those facts."

In the body of the opinion the court says:

"It is contended by the counsel for the government that this assertion, being in the official communication of the Chief Quartermaster of the Department of Texas, is itself sufficient and competent evidence of the fact. We do not think that the authorities cited support the proposition. They present applications in various instances of the well established rule that official reports and certificates made contemporaneously with the facts stated, *and in the regular course of official duty*, by an officer having personal knowledge of them, are admissible for the purpose of proving such facts. Manifestly the design and meaning of this rule is not to convert incompetent and irrelevant evidence into competent and relevant evidence simply because it is contained in an official communication. Had the officer been testifying under oath, such an assertion would have been excluded as inadmissible, upon the ground that *the statement itself implied the existence of primary and more original and explicit sources of information. Clifton v. U. S.*, 4 How. 242, 247; 1 Taylor Evidences Secs. 391, 394; 1 Greenleaf Ev. Secs. 82, 84. The courts hold this rule, which has been invoked, to be limited to only such statements in official documents as the officers are found to make in the regular course of official duty. *The statements of extraneous or independent circumstances, however naturally they may be deemed to have a place in the narrative, is no proof of such circumstances, and is, therefore, rejected, 1 Taylor Ev. Sec. 705; U. S. v. Buford*, 3 Pet. 12."

If the official report of an officer of the United States government not made in the regular course of official duty

is inadmissible to prove the facts contained therein, how then may this court accept, as accurate, true and complete, these reports by the agents and employes of the plaintiff, made outside the line of their duties and used as the basis for the conclusions of the accountant?

See also the cases of *Bronson* v. *Leach*, 42 *N. W.* 1; *Freeborn v. Smith*, 2 *Wall* 160, 178; *Dwyer v. Dunbar*, 5 *Wall* 318; *Glenn* v. *Liggett*, 47 Fed. 473.

Evidence of a witness derived from written memoranda of another is hearsay.

Traber v. *Hicks*, 131 Mo. 180, 32 S. W. 445.

Young v. *Miles*, 20 Wis. 615.

Hibbard v. *Mills*, 46 Vt. 243.

The case of *Hegler* v. *Faulkner*, 153, U. S., 109, contains a full discussion of the inadmisability of records other than judicial and the hearsay nature of testimony based thereupon. The principle announced therein exclude from consideration the Time Studies.

Respectfully submitted,

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